NOISE ELEMENT

Technical Reference Document

Tulare County Planning And Development Department

88 00823

TECHNICAL REFERENCE DOCUMENT

NOISE ELEMENT OF THE GENERAL PLAN TULARE COUNTY, CALIFORNIA

Prepared by

TULARE COUNTY PLANNING AND DEVELOPMENT DEPARTMENT

With

BROWN-BUNTIN ASSOCIATES, INC.
Visalia, California

In Association with

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Visalia, California

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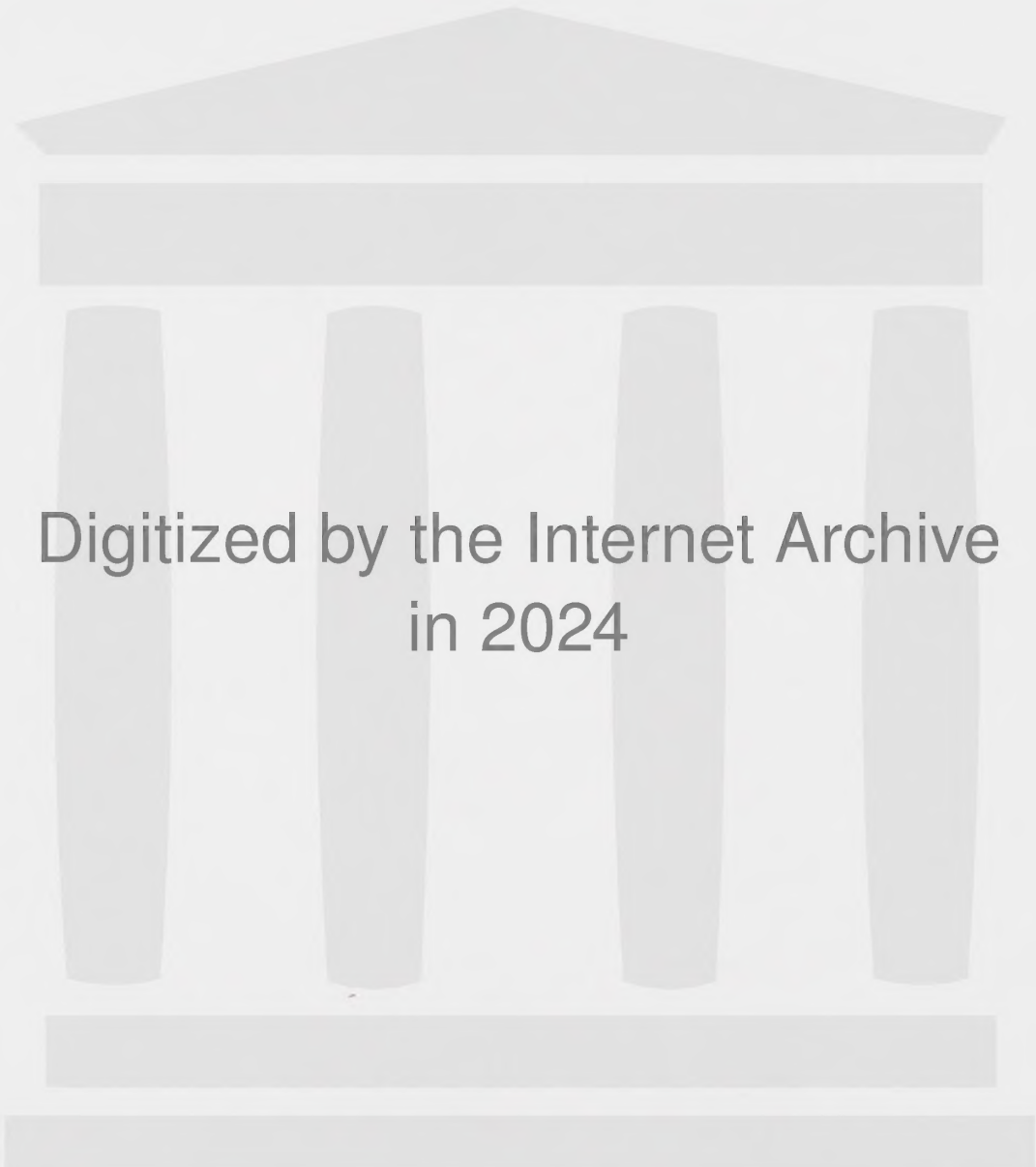

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1.Ø INTRODUCTION

The Technical Reference Document is a supplement to the Policy Document of the Noise Element of the General Plan which provides background information concerning the methods and data used in the preparation of the Noise Element. It is intended that the Technical Reference Document be used by Tulare County and the incorporated cities of Tulare County as a resource when evaluating the noise-related implications of specific development proposals or long-range planning efforts.

2.Ø NOISE AND ITS EFFECTS ON PEOPLE

2.1 NOISE ASSESSMENT

Noise is often defined simply as unwanted sound, and thus is a subjective reaction to characteristics of a physical phenomenon. The descriptors of community noise in current use are the results of many years of effort to translate objective measurements of sound into measures of subjective reaction to noise. Before elaborating on these descriptors, it is useful to discuss some fundamental concepts of sound.

Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 2Ø times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, now called Hertz (Hz) by international agreement.

The speed of sound in air is approximately 77Ø miles per hour, or 1,13Ø feet/second. Knowing the speed and frequency of a sound, one may calculate its wavelength, the physical distance in air from one compression of the atmosphere to the next. An understanding of wavelength is useful in evaluating the effectiveness of physical noise control devices such as mufflers or barriers, which depend upon either absorbing or blocking sound waves to reduce sound levels.

To measure sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel (dB) scale was devised.

The decibel scale uses the hearing threshold as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. Use of the decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. In the range of usual environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighting the frequency response of a sound level measurement device (called a sound level meter) by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Figure 2-1 illustrates typical A-weighted sound levels due to recognizable sources.

It is common to describe community noise in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, and shows very good correlation with community response to noise.

Two composite noise descriptors are in common use today: L_{dn} and CNEL. The L_{dn} (day-night average level) is based upon the average hourly L_{eq} over a 24-hour day, with a +10 decibel weighting applied to nighttime (10:00 p.m. to 7:00 a.m.) L_{eq} values. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were subjectively twice as loud as daytime exposures. The CNEL (Community Noise Equivalent Level), like L_{dn}, is also based upon the weighted average hourly L_{eq} over a 24-hour day, except that an additional 4.77 decibel penalty is applied to evening (7:00 p.m. to 10:00 p.m.) hourly L_{eq} values.

The CNEL was developed for the California Airport Noise Regulations, and is applied specifically to airport/aircraft noise assessment. The L_{dn} scale is a simplification of the CNEL concept, but the two will usually agree, for a given situation, within 1 dB. Like the L_{eq}, these descriptors are also averages and tend to disguise variations in the noise environment. Because

Figure 2-1

Examples of Noise Levels

Level, dBA	Activity	Subjective Evaluations
140		
	Sonic booms	
130	Threshold of pain	
		Deafening
120	Threshold of discomfort	
	Amplified music	
110	Commercial jet takeoff at 200 feet	
100	Auto horn at 10 feet	
		Very loud
90	Noisy factory interior	
	Heavy truck at 50 feet	
80		
	New automobile at 50 feet	Loud
70	Stenographic room	
60	Normal conversation at 6 feet	
		Moderate
50	Office interior	
40	Soft radio music	
		Faint
30	Residence interior	
20	Whisper at 6 feet	
		Very faint
10	Human breathing	
0	Threshold of audibility	

BBA

L_{dn} and CNEL presume increased evening or nighttime sensitivity, they are best applied as criteria for land uses where nighttime noise exposures are critical to the acceptability of the noise environment, such as residential developments.

Noise in the community has often been cited as being a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from the interference with human activities such as sleep, speech, recreation, and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, and the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being is the basis for land use planning policies directed towards the prevention of exposure to excessive community noise levels.

To control noise from existing fixed sources many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as planning tools if applied to the potential creation of a nuisance, or to potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

2.2 CRITERIA FOR ACCEPTABLE NOISE EXPOSURES

The State Office of Noise Control (ONC) "Guidelines for the Preparation and Content of Noise Elements of the General Plan", (Ref.1) include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The ONC guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of L_{dn} or CNEL. A noise environment of 50 to 60 dB L_{dn} or CNEL is considered to be "normally acceptable" for residential uses according to those guidelines. The ONC recommendations also note that, under certain conditions, more restrictive standards may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dBA to reflect lower existing outdoor noise levels.

The U.S. Environmental Protection Agency (EPA) also prepared guidelines for community noise exposure in the publication "Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (Ref.2). These guidelines are based upon assumptions regarding acceptable noise levels which consider occupational noise exposure as well as noise exposure in the home. The guidelines recognize an exterior noise level of 55 dB L_{dn} as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other governmental agencies have adopted suggested land use compatibility guidelines (Ref.3) which indicate that residential noise exposures of 55 to 65 dB L_{dn} are within acceptable limits.

For control of noise nuisances, a community noise control ordinance is the most appropriate tool. The State Office of Noise Control has prepared a Model Community Noise Control Ordinance (Ref.4) which contains recommended noise standards in terms of "time-weighted" levels in dBA. The time-weighting concept allows discrimination of both short- and long-term noise exposures, and sets allowable levels for each. The Model recommends more stringent standards for residential land uses than for commercial and industrial, with the most stringent standards recommended for "rural suburban" situations. The primary noise standard for rural residential uses is 50 dBA in the daytime hours (7 a.m. to 10 p.m.), and 40 dBA at night. The standard is expressed in terms of the level exceeded for 30 minutes of an hour, equivalent to the median level, or L50. This ordinance format is successfully applied in many California cities and counties.

The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance (Ref.5), using the "Equivalent A-weighted Sound Level" (L_{eq}) as the means of defining allowable noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of L_{eq} values as adopted by various local jurisdictions. The mean daytime noise standard reported by the EPA is 56.75 dBA (L_{eq}); the mean nighttime noise standard is 51.76 dBA (L_{eq}). This ordinance format has been successfully applied by the City and County of San Diego.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, or droning or high-pitched sounds may be more annoying than the A-weighted sound level alone will suggest. Many noise standards apply a penalty, or correction, of 5 dBA to such

sounds. The effects of unusual tonal content will generally be more of a concern at nighttime, when residents may notice the sound in contrast to previously-experienced background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the relative loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Table 2-1 is commonly used to show expected public reaction to changes in environmental noise levels. This table was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise, or to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dBA, the usual range of voice and interior noise levels. It is probably not directly applicable to public perception of identifiable intrusive noise sources in very quiet environments because of the difference in frequency content between background noise sources and intrusive sounds, as well as the fact that the absolute amount of energy required to make a given change in sound pressure level is much smaller at low noise levels than at higher levels. Table 2-1 should therefore only be applied in a general manner to show the relationship between changes in sound energy, sound pressure levels and subjective reaction.

The comparisons of subjective reaction outlined in Table 2-1 are not applicable to noise exposures which are very quiet or very loud. For example, a whisper which is increased by 10 decibels, e.g., from 20 dBA to 30 dBA, remains a whisper, and would still be described as quiet. In contrast, an increase in the noise level of a diesel locomotive from 90 dBA to 100 dBA would be a change from a loud noise to a very loud noise. Thus the subjective reaction to a 10 dBA change in either case may be different, even though the change in level is the same.

TABLE 2-1

SUBJECTIVE REACTION TO CHANGES IN NOISE LEVELS OF SIMILAR SOURCES

Increase in Sound Pressure Level, dBA	Relative Increase In Acoustical Energy	Subjective Reaction
1	1.26 times	Minimum Detectable Change (Lab)
3	2.0 times	Usually Noticeable Change
5	3.2 times	Definitely Noticeable Change
10	10.0 times	Twice as Loud as Before

Sources: Various, reported by Brown-Buntin Associates, Inc.

3.0 EXISTING AND FUTURE NOISE ENVIRONMENT

3.1 Overview of Sources

Based on discussions with Tulare County Association of Governments staff, on information provided by questionnaires completed by the County and the eight (8) incorporated cities of the County and on field studies conducted by BBA, it was determined that there are a number of potentially significant sources of community noise within Tulare County and its incorporated cities. These sources include traffic on State highways, major County roadways and city streets, railroad operations, airport operations, industrial facilities and agricultural activities. Specific noise sources selected for study are discussed in the following sections. Figure 3-1 shows the generalized locations of major noise sources selected for study, and for which generalized L_{dn} contours have been prepared. Noted within Figure 3-1 are areas where noise contour maps are included as Appendix B of the Policy Document of this Element.

3.2 Methods and Noise Exposure Maps

Analytical noise modeling techniques in conjunction with actual field noise level measurements were used to develop generalized L_{dn} or CNEL contours for

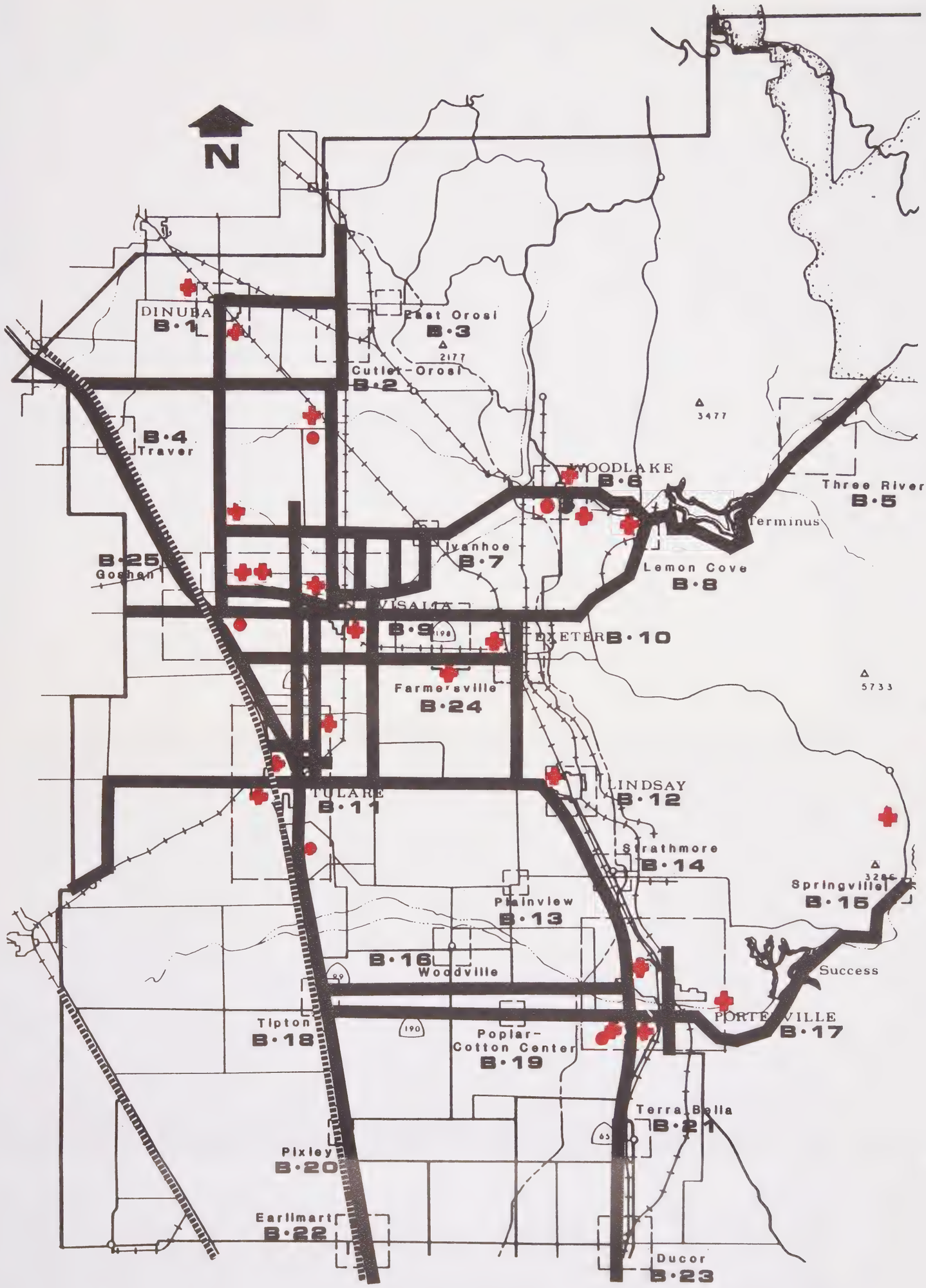
major sources of noise within Tulare County and its incorporated cities for existing (1986) and future (2010) conditions.

Analytical noise modeling techniques generally make use of source-specific data including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Analytical methods have been developed for many environmental noise sources including roadways, railroad line operations, railroad yard operations, industrial plants and aircraft/airport operations. Such methods will produce reliable results as long as data inputs and assumptions are valid for the sources being studied. The analytical methods used in this report closely follow recommendations made by the State Office of Noise Control, and were supplemented where appropriate by source-specific noise level data to account for local conditions.

Noise exposure contours for major sources of noise within the incorporated and unincorporated areas of Tulare County are contained within Appendix B of the Policy Document. The maps depict noise exposure within each of the incorporated or major unincorporated communities of the County. Noise exposure in outlying areas of the County may be derived from the tables and discussions of the following text which describe the distance from the center of major noise sources to L_{dn} or CNEL contours. It should be noted that the L_{dn} or CNEL contours shown in Appendix B of the Policy Document or described in the text of this document are generally based upon annual average conditions (unless otherwise noted), and are not intended to be site-specific where local topography, vegetation or intervening structures may significantly affect noise exposure at a given receiver location. It is intended that the noise exposure maps be used by Tulare County and the incorporated cities of Tulare County during the implementation of the Noise Element through the project review and long range planning processes.

3.3 State Highways and Major County and City Roadways

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop L_{dn} contours for the State highways, major County roadways and city streets within the study area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The FHWA Model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks, (3 axles or greater) with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model was



MAJOR NOISE SOURCES

developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within plus or minus 1.5 dB. To predict L_{dn} values it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and to adjust the traffic volume input data to yield an equivalent hourly traffic volume. BBA experience with the use of the FHWA Model has indicated that for most roadways, the model generally overpredicts traffic noise exposure by 1-2 dB in areas 100-200 feet from the center of the roadway, and that its use will generally result in a conservative estimate of traffic noise exposure.

Traffic data representing annual average daily traffic volumes (AADT), truck mix and the day/night distribution of traffic for existing (1986) and future (2010) conditions were obtained from Caltrans, the Tulare County Public Works Department, and the Cities of Visalia, Tulare, Porterville, Dinuba, Lindsay, Exeter, Woodlake and Farmersville. Estimates of future traffic volumes for a few Tulare County roadway segments were provided by BBA based upon growth rates for comparable roadways since these data were not available from the County. Using the FHWA Model and the traffic data in Table 3-1, the distance from the center of the roadway to the 60 and 65 dB L_{dn} contour for existing and projected future traffic conditions was calculated. and are summarized in Table 3-1. Table 3-1 is subdivided into city streets, State highways and rural County roadways. The approximate locations of the 60 dB L_{dn} contours for existing and projected future noise levels are shown on maps for each community in Appendix B of the Policy Document. It should be noted that since calculations did not take into consideration shielding caused by local buildings or topographical features, the distances reported in Table 3-1 and depicted in Appendix B of the Policy Document should be considered as worst-case estimates of noise exposure along roadways in the County. Noise exposure behind the first row of houses or other types of buildings will typically be reduced by 5-15 dB. The effects of elevated or depressed roadways, which are common along S.R. 99, S.R. 198, and portions of S.R. 65 are also not accounted for in Table 3-1. Typically, traffic noise levels will be reduced by about 5-12 dB along a depressed section of roadway depending on the depth of the cut and distance from the roadway. Elevated sections of roadway will provide varying degrees of noise reduction up to approximately 10 dB depending upon proximity of the receiver to the roadway. At distances greater than approximately 300 feet from an elevated roadway, noise levels may generally be considered to be equivalent to a non-elevated roadway.

TABLE 3-1

TRAFFIC AND NOISE LEVEL DATA
STATE HIGHWAYS AND MAJOR LOCAL STREETS
TULARE COUNTY, CALIFORNIA

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
State Highways										
SR 63										
(SR 137 to Walnut)	14000	18984	93/7	3.0	2.0	45	83	178	101	219
(Walnut to SR 198)	28000	37968	93/7	3.0	2.0	45	132	283	161	347
(SR 198 to Ave 328)	7400	10034	93/7	3.0	2.0	35	37	81	46	99
(Ave 328 to SR 201)	5600	7594	93/7	3.0	2.0	45	45	97	55	119
(SR 210 to Cutler)	10700	14509	93/7	4.0	3.0	55	106	229	130	281
(Cutler to Ave 416)	7000	9452	93/7	4.0	3.0	45	60	129	73	158
SR 65										
(So Co Line to SR 190)	7000	9492	93/7	4.0	16.0	55	152	327	186	401
(SR 190 to SR 137)	11000	14916	93/7	4.0	16.0	55	205	443	252	542
(SR 137 to SR 198)	7000	9492	93/7	4.0	16.0	55	152	327	186	401
SR 99										
(Co Line to Co Line)	27000	36612	81/19	3.0	30.0	55	731	1576	896	1930
SR 137										
(Rd 28 to Rd 84)	2200	2983	82/18	8.0	2.0	55	53	114	65	140
(Rd 84 to M St)	7000	9492	82/18	8.0	2.0	55	115	247	140	302
(M St to SR 63)	15000	20340	82/18	8.0	2.0	45	140	302	172	370
(SR 63 to SR 65)	7000	9492	82/18	8.0	2.0	55	115	247	140	302
SR 198										
(Co Line to Rd 102)	21000	28476	87/13	4.0	6.0	55	249	537	305	658
(Rd 102 to SR 63)	28000	37968	87/13	2.0	3.0	55	229	493	281	605
(SR 63 to Rd 164)	16000	21696	87/13	3.0	10.0	55	251	541	307	662
(Rd 164 to SR 65)	10000	13560	87/13	3.0	10.0	55	183	395	225	484
(SR 65 to SR 245)	6000	8136	87/13	9.0	2.0	55	94	202	115	248
(SR 245 to Park Boundary)	2300	3118	87/13	9.0	2.0	55	50	107	61	131
SR 190										
(SR 99 to SR 65)	2500	3390	88/12	6.0	5.0	55	58	124	71	152
(SR 65 to Main St)	10500	14238	88/12	3.0	3.0	45	90	193	110	237
(Main St to Hospital Rd)	8000	10848	88/12	3.0	3.0	45	75	161	92	198
(Hospital Rd to Balch Pk)	5000	6780	88/12	3.0	3.0	55	73	157	89	193

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
State Highways (Continued)										
SR 201										
(Kings River to Rd 80)	3000	4068	93/7	6.0	4.0	55	52	112	64	137
(Rd 80 to Rd 144)	2000	2712	93/7	6.0	4.0	55	40	85	49	105
SR 216										
(SR 63 to Rd 140)	6000	8136	93/7	6.0	2.0	45	52	112	64	138
(Rd 140 to Rd 196)	3500	4746	93/7	6.0	2.0	55	49	107	61	131
(Rd 196 to SR 245)	4200	5695	93/7	6.0	2.0	55	56	120	68	147
(SR 245 to SR 198)	2700	3661	93/7	2.0	3.0	55	40	86	49	105
SR 245										
(SR 198 to Ave 352)	4000	5424	93/7	2.0	10.0	55	81	174	99	213
(Ave 352 to SR 201)	1500	2034	93/7	2.0	10.0	55	42	91	52	111
City of Visalia										
Alta (Goshen to Plaza)	6700	16000	89/11	18.0	10.0	45	127	274	227	489
Plaza (Alta to Airport Dr)	7400	19000	88/12	18.0	10.0	45	140	301	262	565
Akers (N Goshen to SR 198)	3600	5100	93/7	20.0	5.0	40	52	112	66	141
Akers (Caldwell to SR 198)	4900	7200	90/10	15.0	5.0	40	66	141	85	182
Mooney Blvd										
(W Main to Mineral King)	13700	21000	93/7	15.0	5.0	30	80	172	106	229
Divisadero										
(Murray to Houston)	3950	6000	87/13	10.0	2.0	35	37	79	49	105
Willis (Murray to Main)	4500	6100	95/5	10.0	1.0	45	41	88	50	108
West (Main to SR 198)	4000	6000	94/6	15.0	2.0	45	49	105	64	137
Watson										
(Paradise to SR 198)	4000	6400	95/5	10.0	1.0	45	38	81	52	111
Locust (Tulare to Noble)	5500	7000	93/7	15.0	2.0	35	39	84	46	99
Court (Houston to NE 3rd)	3000	5600	93/7	15.0	2.0	35	29	62	43	93
Santa Fe										
(Caldwell to Tulare)	5800	17900	91/9	15.0	5.0	55	111	238	234	505
(Houston to Center)	3000	7000	95/5	10.0	2.0	35	23	51	41	89
Burke (Goshen to Noble)	2800	4000	95/5	20.0	7.0	35	25	54	32	69
Ben Maddox										
(City Limit to Noble)	12500	18100	91/9	20.0	7.0	50	190	410	243	524

TABLE 3-1 (Continued

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Visalia (Continued)										
Pinkham (Noble to Walnut)	3300	5100	90/10	10.0	2.0	40	36	79	49	105
Lovers Lane										
(St Johns to Houston)	1900	6700	91/9	2.0	1.0	45	20	42	46	98
(Houston to Noble)	12250	24000	88/12	20.0	5.0	45	163	351	255	550
(Noble to Walnut)	13100	35400	89/11	20.0	5.0	55	220	475	428	921
Houston										
(Mooney to Santa Fe)	9800	13300	91/9	15.0	3.0	30	59	127	72	155
Doe (Kelsey to Shirk)	1600	450	97/3	20.0	10.0	35	27	58	53	115
Goshen										
(W City Line to Akers)	6800	13700	88/12	18.0	10.0	50	151	326	241	520
(Akers to Divisadero)	9200	21700	90/10	17.0	7.0	50	154	331	272	586
Murray										
(Divisadero to Burke)	8600	14400	93/7	17.0	7.0	35	83	178	117	251
Goshen										
(Burke to Lovers Lane)	2800	5100	94/6	17.0	5.0	40	40	87	60	130
Mill Creek										
(Demaree to Main)	2700	4000	93/7	10.0	0.1	35	19	40	24	52
Hall (Main to Center)	7200	10000	94/6	15.0	3.0	35	53	115	67	143
Center										
(Hall to Ben Maddox)	6000	9400	95/5	15.0	3.0	30	37	79	49	106
Main										
(W to E Mineral King)	9200	13000	94/6	15.0	5.0	40	87	187	109	235
Acequia (Conyer to Burke)	3050	5000	96/4	15.0	3.0	35	28	60	39	83
Mineral King										
(Mooney to E Co Line)	6300	19000	95/5	20.0	4.0	40	66	143	138	298
Noble (Mooney to McAuliff)	4300	7900	95/5	20.0	4.0	45	61	131	91	196
Tulare										
(Woodland to Bonnie)	9750	12000	93/7	15.0	2.0	30	50	108	57	124
(Locust to Lovers Lane)	6600	10000	92/8	15.0	2.0	45	73	157	96	208
Walnut										
(W City Line to Lvr's Ln)	9000	11000	94/6	15.0	3.0	45	89	192	102	220
Caldwell										
(Akers to Santa Fe)	10100	24400	93/7	15.0	5.0	50	130	281	235	506

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Visalia (Continued)										
Riggin (Mooney to SR 63)	2800	8900	88/12	10.0	1.0	45	38	82	82	176
"K" Road (Santa Fe to Pinkham)	2500	5500	90/10	10.0	1.0	40	27	59	46	100
Chinowith (Goshen to SR 198)	4700	8000	90/10	15.0	3.0	40	56	121	80	172
Prospect (Conyer to SR 63)	2000	3400	91/9	10.0	0.1	30	13	27	18	39
Bridge (Murray to Tulare)	4900	7300	90/10	20.0	1.0	35	45	96	58	126
McAuliff (City Limit to SR 216)	4800	8000	92/8	15.0	2.0	35	40	87	57	123
Central (Tulare to Walnut)	3050	5000	93/7	15.0	1.0	30	21	45	29	62
Divisadero (Walnut to Whitendale)	3000	7000	94/6	15.0	1.0	35	25	54	44	95
City of Tulare										
Blackstone										
(250' S of Tulare Ave)	8700	17400	93/7	3.0	2.0	40	51	109	80	173
(150' S of Cross Ave)	10300	20600	93/7	3.0	2.0	40	57	122	90	194
(200' S of Continental)	12400	24800	93/7	2.0	1.0	40	53	114	84	181
"J" Street										
(400' S of Prosperity N/B	4100	8200	93/7	3.0	2.0	40	31	66	49	105
(400' S of Prosperity S/B	3600	7200	93/7	3.0	2.0	40	28	61	45	96
(400' S of Prosperity)	7900	15800	93/7	3.0	2.0	40	48	102	75	163
"K" Street										
(150' N of King Ave)	4200	8400	93/7	3.0	2.0	40	31	67	50	107
(200' N of Alpine)	11800	23600	93/7	3.0	2.0	40	62	134	99	212
Laspina										
(400' S of Tulare)	7100	14200	93/7	2.0	1.0	40	37	79	58	125
Prosperity										
(300' E of N "J" St)	6200	12400	93/7	2.0	1.0	40	33	72	53	114
(200' N of SR 99)	12600	25200	93/7	2.0	1.0	40	54	115	85	183
(300' E of SR 99)	12400	24800	93/7	2.0	1.0	40	53	114	84	181
(600' W of Laspina)	7700	11550	93/7	2.0	1.0	40	39	83	51	109

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Tulare (Continued)										
Cross Ave										
(150' E of "K" St)	8500	17000	93/7	2.0	1.0	40	41	89	65	141
(100' E of "E" St)	5400	10800	93/7	2.0	1.0	40	30	66	48	104
(200' E of Cherry)	5200	7800	93/7	2.0	1.0	40	30	64	39	84
Paige Ave										
(400' W of Blackstone)	4300	5590	93/7	3.0	2.0	40	32	68	38	81
(150' E of Blackstone)	5700	7400	93/7	3.0	2.0	40	38	82	45	98
Tulare										
(200' W of "L" St)	9900	12870	93/7	3.0	2.0	40	55	119	66	142
(150' W of "F" St)	4700	6110	93/7	3.0	2.0	40	34	72	40	86
Cherry (500' E of Cross)	6300	9450	93/7	2.0	1.0	40	34	73	44	95
Bardsley										
(75' E of So Dayton)	11700	17550	93/7	3.0	2.0	40	62	133	81	174
(800' E of "K" St)	9100	13650	97/3	3.0	2.0	40	44	95	58	125
(200' E of "E" St)	5000	7500	93/7	3.0	2.0	40	35	75	46	99
"J" St (200' N of Inyo)	11100	16650	95/5	2.0	1.0	35	60	128	78	168
City of Porterville										
Henderson										
(Westwood to Newcomb)	3900	17080	95/5	3.0	2.0	35	23	49	61	130
(Newcomb to Prospect)	8650	37000	95/5	3.0	2.0	35	38	83	101	218
(Prospect to Hwy 65)	14400	42000	80/20	3.0	2.0	35	84	181	171	369
(Highway 65 to Indiana)	16300	47596	85/15	3.0	2.0	35	81	175	165	357
(Indiana to Main)	10620	31010	95/5	3.0	2.0	35	44	95	90	194
(Main to Plano)	4600	16750	95/5	2.0	1.0	35	21	44	49	105
(Plano to E Terminous)	500	1825	98/2	2.0	1.0	25	2	5	6	12
Morton										
(Westwood to Newcomb)	4225	12352	95/5	2.0	1.0	35	19	42	40	85
(Newcomb to Prospect)	8800	25696	95/5	2.0	1.0	35	32	68	65	139
(Prospect to Hwy 65)	9850	28762	95/5	2.0	1.0	35	34	73	70	150
(Hwy 65 to "E" St)	10180	29725	95/5	2.0	1.0	35	35	75	71	153
("E" St to Plano)	10450	30514	95/5	2.0	1.0	35	35	76	72	156
(Plano to E of Leggett)	9000	32850	98/2	2.0	1.0	35	28	60	66	143

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Porterville (Continued)										
Olive										
(Westwood to Newcomb)	7825	28561	95/5	3.0	2.0	50	61	131	144	311
(Newcomb to Prospect)	13500	39420	95/5	3.0	2.0	35	52	112	106	228
(Prospect to Hwy 65)	18100	52852	93/7	3.0	2.0	35	68	147	139	300
(Hwy 65 to Jaye St)	18500	54020	85/15	3.0	2.0	35	88	190	180	388
(Jaye to Main)	10933	31924	65/35	3.0	2.0	30	73	157	149	321
(Main to Plano)	9200	26864	75/25	3.0	2.0	30	55	119	113	243
Orange										
("E" St to Plano)	4450	12994	95/5	2.0	1.0	35	20	43	41	88
(Plano to Leggett)	5600	16352	98/2	2.0	1.0	35	20	44	42	90
Westwood										
(Olive to Henderson)	3006	10971	95/5	2.0	1.0	40	19	41	45	97
Newcomb										
(Tule River to Olive)	1500	6570	99/1	2.0	1.0	35	8	17	22	46
(Olive to Henderson)	6600	19272	93/7	2.0	1.0	35	28	61	58	124
(Henderson to N Grand)	3800	16644	98/2	2.0	1.0	35	16	34	42	91
Prospect										
(Morton to Henderson)	3400	9928	94/6	2.0	1.0	35	17	38	36	77
(Henderson to Mulberry)	5850	17082	95/5	2.0	1.0	25	14	31	30	64
Indiana										
(Putnam to Westfield)	2600	7592	96/4	2.0	1.0	30	11	23	22	47
Main										
(N Grand to Henderson)	5460	15943	94/6	3.0	2.0	35	29	64	60	130
(Henderson to Morton)	10995	24079	94/6	3.0	2.0	25	29	64	50	107
(Morton to Orange)	8120	17783	93/7	3.0	2.0	25	25	54	42	91
(Orange to Hwy 190)	6900	25185	98/2	3.0	2.0	40	35	75	83	179
Jaye St.										
(Olive to Hwy 190)	5425	19801	97/3	2.0	1.0	25	13	27	30	64
Plano										
(Henderson to Olive)	6116	26787	89/11	2.0	1.0	40	38	81	101	218
(Olive to Hwy 190)	10025	29273	94/6	3.0	2.0	40	54	116	10	236

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Dinuba										
Alta Ave										
("M" St to El Monte)	8600	14100	92/8	19.0	10.0	35	100	216	140	301
(El Monte to Saginaw)	12000	19800	92/8	19.0	10.0	35	87	188	122	262
(Saginaw to Sequoia)	8700	16000	92/8	19.0	10.0	35	70	151	105	227
El Monte										
(SPRR to Alta)	9500	15700	93/7	19.0	10.0	35	80	173	112	242
(Alta to Tulare)	7000	11600	93/7	19.0	10.0	35	65	141	92	198
(Tulare to Crawford)	10500	17300	93/7	19.0	10.0	35	86	185	120	258
Tulare										
("M" St to "H" St)	----	9000	93/7	10.0	1.0	35	--	---	47	101
"L" St										
(Merced to Kern)	----	7000	93/7	10.0	1.0	35	--	---	40	86
Saginaw										
(Alta to Lincoln)	----	4000	93/7	1.0	0.1	35	--	---	15	33
Kamm										
(Alta to Crawford)	----	3000	93/7	10.0	2.0	35	--	---	25	55
Crawford										
(Sierra to El Monte)	----	8000	93/7	10.0	2.0	35	--	---	49	105
(El Monte to North Way)	----	8000	93/7	10.0	2.0	35	--	---	49	105
Lincoln										
(El Monte to Saginaw)	----	4000	93/7	1.0	0.1	35	--	---	15	33
Magnolia										
(College to Crawford)	2100	3400	95/5	1.0	0.5	35	10	22	14	31
Sierra										
(College to Crawford)	2600	4300	94/6	1.0	0.1	35	22	48	16	33
City of Lindsay										
Hermosa St										
(Fremont to Vernon)	6000	12000	93/7	5.0	5.0	45	66	141	104	224
Tulare Rd										
(City Limit - City Limit)	4000	8000	93/7	2.0	2.0	45	35	75	55	118

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
City of Exeter										
Firebaugh Ave (Filbert to Kaweah)	6000	9600	93/7	2.0	1.0	45	39	85	54	116
Visalia Rd (Elberta to N Filbert)	6600	10560	93/7	2.0	1.0	45	42	91	58	124
Kaweah Ave (N to S City Limits)	7400	11840	93/7	2.0	1.0	45	45	98	62	134
City of Woodlake										
Valencia (S City Limit to Cajon)	2000	3000	80/20	20.0	20.0	40	84	182	110	238
Naranjo (Cypress to Castle Rock)	1500	2000	80/20	20.0	30.0	40	85	184	103	223
City of Farmersville										
Farmersville Blvd (N City Limit to Visalia Rd)	1000	1400	80/20	6.0	3.0	35	18	38	22	47
Visalia Rd (W City Limit to Farmersville Blvd)	1350	1890	80/20	5.0	4.0	35	23	50	29	62
(Farmersville Blvd to E City Limit)	1150	1610	80/20	6.0	3.0	35	19	41	24	52
Tulare County Roads										
Ave 56 (Rd 96 to Rd 144)	----	2979	90/10	8.6	5.8	55	—	---	68	146
(Rd 144 to Rd 168)	----	6400	90/10	8.6	5.8	55	—	---	113	243
(Rd 168 to Rd 208)	----	7000	90/10	8.6	5.8	55	—	---	120	258
(Rd 208 to Rd 244)	----	2800	90/10	8.6	5.8	55	—	---	65	140
Ave 96 (Rd 176 to Rd 192)	----	3891	90/10	8.6	5.8	55	—	---	81	174
(Rd 208 to Hwy 65)	----	5136	90/10	3.6	5.8	55	—	---	97	209
Ave 148 (Rd 252 to Rd 256)	8100	16200	91/9	10.0	3.5	35	61	131	96	208

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
Tulare County Roads (Continued)										
Ave 152										
(Rd 192 to Rd 214)	4000	2414	91/9	8.7	4.4	55	74	159	53	114
(Rd 214 to Rd 224)	5400	2414	91/9	8.7	4.4	50	79	170	46	99
(Rd 244 to Rd 232)	9700	7805	91/9	8.7	4.4	50	117	251	101	217
Ave 164										
(Rd 237 to Main St)	3300	6600	92/8	5.0	2.0	55	48	103	76	163
Ave 168										
(Rd 152 to Rd 192)	----	3300	92/8	5.0	2.0	55	--	---	48	103
Ave 192										
(Rd 192 to Rd 196	2200	4400	90/10	12.1	6.4	55	61	131	96	208
Ave 196										
(Rd 196 to Orange Belt)	----	2700	90/10	12.1	6.4	55	--	---	70	150
(Orange Belt to Rd 244)	----	5286	90/10	12.1	6.4	55	--	---	109	235
(Rd 244 to Rd 276)	----	2600	90/10	12.1	6.4	55	--	---	68	146
Ave 216										
(Rd 96 to Dr 112 A)	2500	4920	90/10	10.0	10.0	55	74	160	117	252
Ave 232										
(Rd 84 to Tulare)	2000	4000	88/12	8.9	6.0	55	56	121	89	191
Ave 240										
("J" St to Rd 102)	8200	7969	88/12	8.9	6.0	55	143	309	141	303
Ave 248										
(Rd 84 to "J" St)	----	10000	88/12	12.0	5.0	55	--	---	165	356
("J" St to Rd 116)	3500	10425	88/12	12.0	5.0	55	82	177	170	366
Ave 264										
(Rd 100 to Rd 116)	----	16000	88/12	12.0	5.0	55	--	---	226	487
Ave 280										
(Dr 88 to Shirk)	4500	12693	91/9	5.0	5.0	55	76	164	152	327
(Shirk to Akers)	3000	11000	91/9	5.0	5.0	55	58	125	138	297
(Court to Rd 148)	8000	23000	91/9	5.0	5.0	55	112	240	226	486
(Rd 148 to Rd 188)	6000	23000	91/9	5.0	5.0	55	92	199	226	486
Ave 304										
(Shirk to City Limits)	2300	15120	89/11	12.0	8.0	55	69	149	242	522
Ave 308										
(Demaree to Mooney)	4000	8000	90/10	4.0	5.0	55	71	153	113	242

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet)* to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
Tulare County Roads (Continued)										
Ave 313										
(Rd 144 to Rd 148)	2000	4000	93/7	2.0	0.1	55	23	50	37	80
Ave 328										
(Demaree to Rd 112)	2300	11096	92/8	10.0	15.0	55	78	168	223	480
(Rd 112 to Rd 160)	3500	8351	92/8	10.0	15.0	55	103	222	184	397
Ave 368										
(Hwy 99 to Rd 44)	----	6667	92/8	10.0	15.0	55	--	---	159	341
Ave 384										
(Rd 28 to Rd 128)	2800	4500	89/11	15.0	20.0	55	117	252	161	346
Ave 416										
(Co Line to Rd 48)	4600	8100	90/10	24.7	5.7	55	117	252	171	368
(Rd 48 to Rd 124)	7000	15000	90/10	24.7	5.7	55	155	333	257	554
(Rd 130 to Rd 144)	2500	1593	90/10	24.7	5.7	55	78	168	60	129
Dr 76										
(Ave 305 to Elder)	2900	5800	93/7	6.0	4.2	55	51	111	82	176
Dr 99										
(Pleasant to Ave 256)	5000	10000	88/12	23.9	6.9	50	119	256	188	406
Dr 112										
(Rd 124 to Turner Dr)	3600	7200	90/10	15.0	10.0	55	102	219	161	348
Dr 238										
(Ave 104 to City Limits)	2500	5000	90/10	10.0	10.0	55	74	160	118	254
Dr 242										
(Ave 165 to Ave 224)	4000	8000	92/8	10.0	10.0	55	95	205	151	326
Rd 56										
(Ave 384 to Ave 432)	2500	5000	88/12	5.6	4.7	55	56	121	89	192
Rd 68										
(Ave 280 to Ave 304)	1500	2215	88/12	5.6	4.7	55	40	86	52	112
Rd 80										
(Ave 308 to Ave 432)	5000	16000	89/11	25.6	18.4	55	182	392	395	850
Rd 92										
(Ave 280 to Hwy 198)	2200	4400	83/17	3.0	2.0	55	44	95	70	150
(Hwy 198 to Ave. 312)	2200	4400	83/17	10.0	10.0	55	83	178	131	283

TABLE 3-1 (Continued)

Roadway Description	AADT 1986	AADT 2010	D/N Split	%MT	%HT	Speed (MPH)	Distance (Feet) to Ldn contours 1986 65 dB	1986 60 dB	2010 65 dB	2010 60 dB
Tulare County Roads (Continued)										
Rd 96										
(Ave 208 to Ave 224)	3000	6000	89/11	11.2	2.5	55	61	132	97	209
Rd 104										
(Ave 392 to Ave 416)	2000	4000	89/11	7.5	3.0	55	44	95	70	150
Rd 108										
(Ave 242 to Ave 256)	7000	10000	91/9	5.0	5.0	55	102	220	130	279
(Ave 256 to City Limits)	8000	10000	91/9	5.0	5.0	55	112	240	130	279
(Ave 304 to Ave 320)	2500	5000	91/9	5.0	5.0	55	51	111	82	176
Rd 116										
(Foster to Tulare)	3500	7000	89/11	15.0	10.0	55	103	222	163	352
Rd 132										
(Ave 305 to Ave 328)	5000	10000	92/8	8.7	5.8	55	90	193	142	306
Rd 140										
(Ave 232 to Ave 280)	5000	18000	89/11	8.9	5.9	55	100	215	234	504
(Ave 280 to Ave 288)	8700	31227	89/11	9.0	6.0	55	145	313	340	733
Rd 144										
(Ave 308 to Ave 320)	3000	6000	93/7	3.0	3.0	55	44	95	70	151
Rd 192										
(Ave 96 to Ave 168)	2300	4300	90/10	8.6	5.8	55	57	123	86	186
Rd 196										
(Ave 276 to Ave 336)	2200	3014	91/9	12.0	10.0	55	68	147	84	181
Rd 204										
(Ave 232 to SR 198)	3500	7000	87/13	13.6	4.6	55	85	184	135	291
Rd 224										
(Hwy 190 to Ave 152)	----	5037	88/12	13.6	4.6	55	--	---	106	228
(Ave 152 to Ave 170)	----	2500	88/12	13.6	4.6	55	--	--	66	143
Rd 252										
(Ave 128 to Hwy 190)	3500	8100	88/12	24.0	2.9	55	92	198	161	346
(City Limits to Ave 148)	9999	19998	88/12	17.2	3.7	40	107	232	171	368

* Distances are from the center of the roadway.

Sources: Brown-Buntin Associates, Inc.
Cities of Visalia, Tulare, Porterville, Dinuba, Lindsay, Exeter, Woodlake and Farmersville
Tulare County Department of Public Works
Caltrans

3.4 Railroads

Railroad operations in Tulare County consist of high speed mainline operations on the Atchison, Topeka and Santa Fe (A.T.& S.F.) Railroad in the southwest corner of the county and on the Southern Pacific Transportation Company (SPTCo.) Railroad along State Route 99. Lower speed branchline and switching operations occur on various A.T.&.S.F. and SPTCo. branchlines located througout the county and on the Visalia Electric Railroad in the Exeter-Woodlake area.

Noise levels from mainline operations within Tulare County were quantified using the analytical methods developed in 1973 by Wyle Laboratories (Wyle Laboratories Report WCR-73-5). The Wyle methodology calculates noise exposure based upon reference noise level data for various types of trains under different operating conditions, distance from the tracks, speed and the characteristics of the track the trains are passing over.

In order to provide a comparison of the noise levels predicted by the Wyle methodology to those actually occurring in Tulare County, and to document single-event noise levels, noise level measurements were conducted at various locations near or away from grade crossings. Sound level measurement equipment consisted of Bruel & Kjaer (B&K) Type 2230 and 2218 integrating sound level meters equipped with B&K Type 4155 and 4165 1/2" microphones, respectively. All equipment was calibrated in the field prior to use with B&K Type 4230 acoustical calibrators, and complies with all applicable standards of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters. The reference measurement distance was 100 feet from the center of the tracks. Specific noise level data are described in the following sections describing operations for each railroad. Generalized 60 dB L_{dn} contours for and SPTCo. mainline operations for existing (1986) and projected future (2000) conditions are shown on the noise contour maps contained within Appendix B of the Policy Document.

A.T.& S.F. Railroad

Mainline operations at the A.T.& S.F. Railroad in Tulare County affect the small communities of Angiola and Allensworth and rural residential uses located near the tracks in the southwest corner of the county. According to the Chief Dispatcher's office in Fresno, there are presently an average of 22 freight and 4 passenger trains per day in this area. Operations are expected to increase to 33 freight and 6 passenger trains per day by the year 2000. Maximum speed is 70 mph for freights and 79 mph for passenger trains. Freight

trains may occur at any time during the day or night and passenger trains generally operate during the daytime (7:00 a.m. - 10:00 p.m.) hours. According to the Wyle methodology, the above-described type and frequency of operations will result in present noise exposures of 65 and 60 dB L_{dn} at approximately 345 and 650 feet, respectively, from the center of the tracks, and at approximately 420 and 820 feet, respectively, from the center of the tracks for projected future operations. Noise levels in the vicinity of grade crossings are somewhat higher than this due to the use of the warning horn. Noise level measurements conducted for 3 A.T.& S.F. freights in the Allensworth area indicated that maximum noise levels generated by individual train events ranged from 93 dBA without the horn to 101 dBA with the horn at 100 feet. Sound Exposure Levels (SEL's) at the same distance ranged from 103.9-107.0 dB. Such levels are consistent with the reference values used by the Wyle Methodology to calculate cumulative noise exposure as defined by L_{dn}.

Branchline operations on the A.T.& S.F. Railroad affect the Cities of Visalia, Tulare, Exeter, Lindsay, Porterville, an area northeast of the City of Dinuba and a number of small communities and rural residential uses within the County. Branchline operations generally occur 1-2 times per day 5-6 days per week. Train movements generally occur during the nighttime hours. Train speeds are generally 15-45 MPH depending upon the track and operating restrictions. Measurements of individual train passbys near Visalia and Tulare indicated that maximum noise levels range from 83 dBA without the horn to 92 dBA with the horn at 100 feet. SEL's at the same distance ranged from 91.0 to 96.4 dB. It is estimated that maximum levels from the horn may occasionally be 5-10 dBA higher than measured depending upon individual locomotives and how the horn is being used. Although significant cumulative noise exposure, as defined by L_{dn}, does not result from A.T.& S.F. branchline operations, maximum noise levels generated by individual train events could be expected to result in significant short-term impacts, especially for residents located near grade crossings where the horn is used.

Source: Chief Dispatcher, A.T.& S.F. Railroad, Fresno, California

SPTCo. Railroad

Mainline operations on the SPTCo. Railroad in Tulare County affect the City of Tulare and a number of small communities and rural residential uses. According to the Trainmaster's office in Fresno, there are presently up to 20 freight train operations per day in the Tulare County Area. Passenger trains presently do not operate on SPTCo. tracks in Tulare County. Estimates of

future operations were not available from the railroad, although approximately 30 freights per day would occur if the rate of growth reported by the A.T.& S.F. Railroad were applied. Train speeds on the mainline are generally 45-65 mph and train movements may occur at any time during the night or day. According to the Wyle methodology, the above-described type and frequency of operation results in noise exposures of 65 and 60 dB L_{dn} at approximately 335 and 660 feet, respectively, from the center of the tracks for present operations, and at approximately 440 and 800 feet, respectively, from the center of the tracks for estimated future operations. Noise levels in the vicinity of grade crossings are somewhat higher than this due to the use of the warning horn. Noise level measurements conducted of 6 SPTCo. freight trains at various locations along the mainline in Tulare County indicated that maximum levels at 100 feet range from 93-96 dBA without the horn to 94-100 with the horn. SEL's at the same locations ranged from 102.9-107.8 dB. Such levels are consistent with the reference levels used by the Wyle methodology to calculate cumulative noise exposure as defined by L_{dn}.

Branchline operations on the SPTCo. Railroad in Tulare County affect the cities of Dinuba, Visalia, Farmersville, Exeter, Lindsay and Porterville and a number of small communities and rural residential uses within the county. Branchline operations presently occur 3 times per week. Their movements may occur at any time of the day or night. Speeds are restricted to a maximum of 40 mph. Measurements conducted on SPTCo. branchline operations in the Visalia area resulted in maximum levels at 100 feet ranging from 92-105 dBA with the use of the horn. SEL's at the same distance ranged from 99.8 to 106.7 dB. Due to relatively infrequent operations on SPTCo. branchlines in Tulare County, cumulative noise exposure as defined by L_{dn} is not significant. However, maximum noise levels in the vicinity of grade crossings would be expected to result in significant short term impacts.

Source: Trainmaster's office, SPTCo., Fresno, California.

Visalia Electric Railroad

The Visalia Electric Railroad is a branchline operation with round trip freight movements between Exeter and Woodlake approximately 3 times per week. Trains generally consist of 1 locomotive (900 hp EMD switcher) and 2-4 cars. Speed is a maximum of 20 mph over welded rail and 10 mph over jointed rail. Operations occur during the daytime hours. Measurements of a train movement at the State Route 65 grade crossing in Exeter indicated that maximum levels at 100 feet from the horn are approximately 96 dBA. The SEL for a single passby was 103.2 dB. As with the A.T.& S.F. and SPTCo. branchline

operations, cumulative noise exposure as defined by L_{dn} is not significant from this operation, although significant short-term impacts may occur near grade crossings during individual train movements.

Source: Mr. Charles Kirkman, Engineer, Visalia Electric Railroad, Exeter, California.

3.5 Airports

The ten (10) public use airports in Tulare County were evaluated to determine where existing or potential future noise-related land use conflicts may occur. The evaluations included interviews with airport management or fixed base operators (FBO's), a field survey of airport facilities, operations and surrounding land uses, and, in some cases, noise monitoring to document noise levels from individual aircraft operations. Noise exposure contours in terms of CNEL were prepared for the airports in instances where the number and type of operations would be expected to result in a 60 dB CNEL contour extending beyond the airport property. Noise contour maps for these airports were prepared based upon annual average operations, which is the customary way of describing airport/aircraft noise exposure around an airport which has fairly constant operations throughout the year.

The Integrated Noise Model (INM) Version 3.8 was used to prepare the CNEL contour maps for airports in Tulare County. The INM was developed by the Federal Aviation Administration, and is the preferred method for quantifying airport/aircraft noise impacts due to its availability and sophistication. Version 3.8 is the most recent version of the INM available, and incorporates the latest alogrithm for calculating sideline noise exposure and an updated data base of aircraft performance parameters and noise levels.

The INM calculates aircraft noise exposure by mathematically combining aircraft noise levels and airport operational factors at a series of points within a cartesian coordinate system which defines the location of airport runways and aircraft flight tracks. All VFR and IFR flight tracks, which are reportedly used with any regularity, were considered in the noise modeling process. User inputs to the INM include the following:

1. Runway configuration
2. Aircraft flight track definition
3. Aircraft stage length (where applicable)
4. Aircraft approach profiles
5. Aircraft traffic volume and fleet mix

The INM data base contains aircraft performance and noise level data which are representative of most of the commercial and general aviation aircraft fleet and some of the military aircraft fleet. The smaller general aviation aircraft types are grouped by the INM data base into a composite single engine propeller class (COMSEP) and a composite twin engine propeller class (COMTEP). Heavier twin engine turbo-prop aircraft, such as the Swearinger Metroliner, Beech King Air and Embraer Bandeirante are generally included in the medium twin engine turbo-prop class (MTETP). Corporate jet aircraft are subdivided into a number of classes ranging from the light quiet turbo-fan (GALQTF-Citation II) to the medium turbo-fan (GAMTF-Sabreliner 75) and light turbo-jet (GALTJ-Lear 25) classes. Most airports can be modeled using the (GALQTF) and composite general aviation jet (COMJET) classes.

Aerial application aircraft are not addressed in the INM data base. Consultation with aerial application aircraft operators, field observations, and noise measurements indicated that it was not practical, nor representative of perceived noise impacts, to prepare CNEL contours which include contributions from aerial application aircraft for airports with frequent operations by such aircraft. The main reason for this is that typical aerial application operations consist of following the shortest possible route to the application site at a minimal altitude, meaning that there are no typical flight tracks. Typical "ferry" altitudes range from 75-300 feet. Since these aircraft produce maximum noise levels of 90-105 dBA during direct overflights at these altitudes, with resulting SEL values of up to 110 dB, the 60 dB CNEL contour would follow the aircraft from the airport to the application site for each flight by the noisier types of aircraft. Suprisingly, one of the most effective noise mitigation measures which may be used by aerial application aircraft operators is a low ferry altitude which minimizes the lateral spreading of noise levels. As long as operators are able to avoid direct overflights, single event impacts at homes located near airports with these types of aircraft operations may be minimized.

The 60 dB CNEL contour for annual average operations at most Tulare County airports is located relatively close to the runway due to relatively low numbers of operations and an aircraft fleet consisting primarily of smaller propeller aircraft. However, it should be noted that maximum noise levels from individual operations by high performance single and twin engine aircraft, aerial application aircraft, fire suppression aircraft and some corporate jets may be expected to result in significant short term noise impacts for persons located near the approach, departure or local training patterns of an airport.

For the airports with a significant number of seasonal aerial application aircraft operations, an area within approximately one-half mile of the end of the runway has been designated on Figures 3-3 through 3-8 to indicate areas where maximum noise levels from single overflights by the noisier types of aerial application aircraft may exceed 100 dBA. Such areas may not be suitable for concentrated residential development due to high noise levels and the difficulty presented to pilots who are trying to avoid direct overflights.

Following are descriptions of operations and resulting noise levels at each public use airport within Tulare County, along with a discussion of existing surrounding land uses and the apparent potential for noise-related land use conflicts.

Visalia Municipal Airport

The Visalia Municipal Airport is the only airport in Tulare County which has scheduled airline service. The airport is classified as a "General Transport" facility and consists of a single 6,559' x 150' runway with a NW-SE (30-12) orientation. There are presently approximately 150,000 annual operations at the airport, of which approximately 44% are twin-engine aircraft (including commuter aircraft) operations and 1% are corporate jet operations. The balance are single engine propeller aircraft operations with occasional helicopter, aerial application aircraft (crop duster) and jet charter (DC9, B737, B727) operations. There are 7 FBO's engaged in instruction, charter service and aircraft maintenance and service at the airport and 167 based aircraft. Commuter airline service is presently provided by American Eagle Airlines (Wings West) with approximately 5-6 departures per day using the Swearinger Metroliner (19 passenger) twin engine turbo-prop aircraft. The majority of aircraft operations (approximately 90%) occur to the northwest on Runway 30. Aircraft operations by time of day are broken down into approximately 75% during the day (7:00 a.m. - 7:00 p.m.), approximately 15%

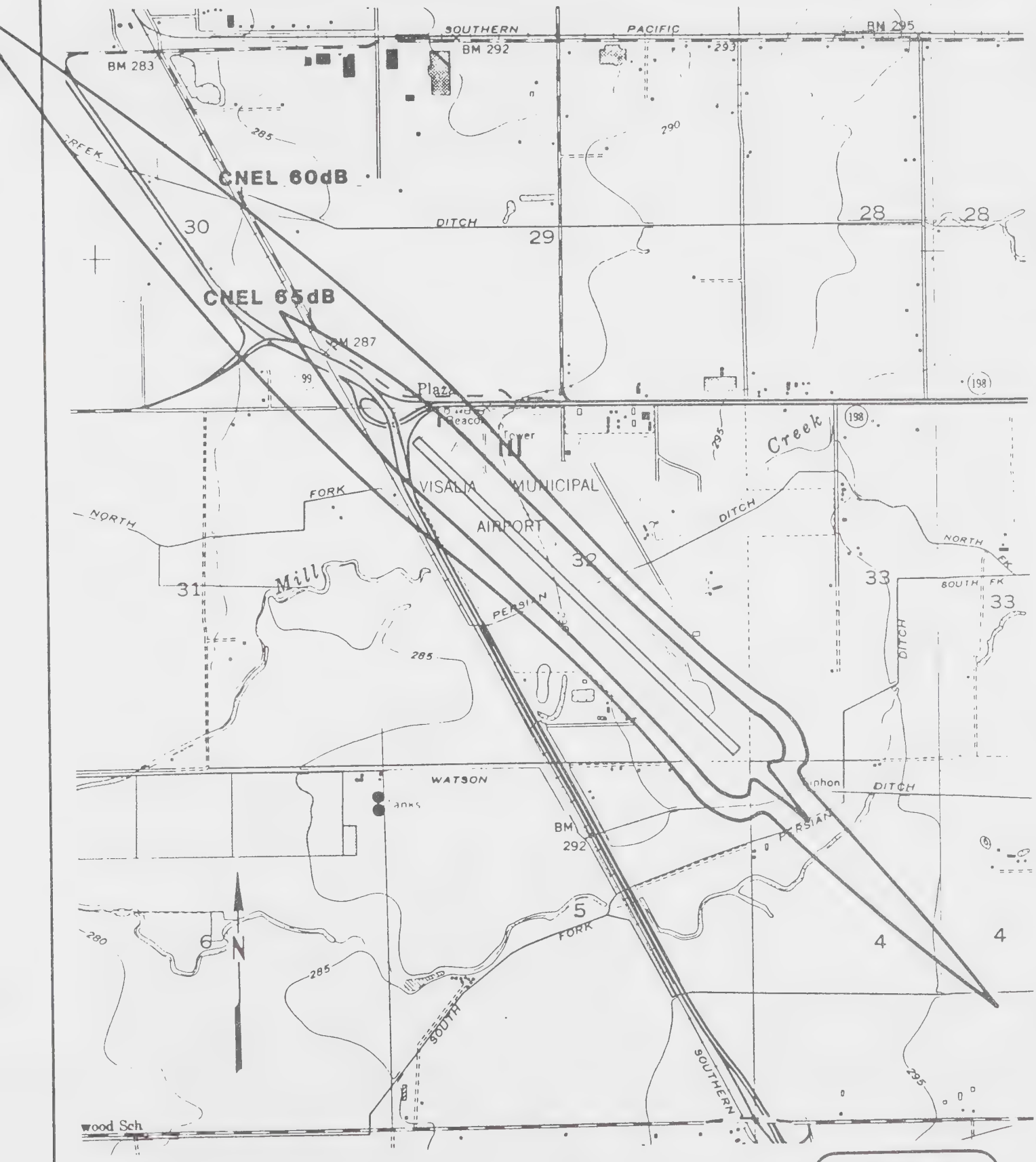
during the evening (7:00 p.m. - 10:00 p.m.) and approximately 10% during the nighttime hours (10:00 p.m. - 7:00 a.m.). The airport Master Plan is presently being updated with completion expected within the next 12 months. The only noise contours which have been previously prepared for the airport were done in terms of the Composite Noise Rating (CNR) scale as part of the previous Master Plan (1973). The 60 and 65 dB CNEL contours for existing operations shown in Figure 3-2 and Appendix B of the Policy Document were prepared using the FAA's Integrated Noise Model (INM-Version 3.8) with inputs based upon the above-described aircraft activity information with aircraft assigned to the flight paths most frequently flown by pilots using the airport facility. When CNEL contours for future conditions are completed as part of the updated Master Plan, they should be included as part of this Noise Element. At the present time, off-airport land uses in the Visalia Municipal Airport environs are generally compatibile with airport uses. Since operations at the airport are expected to increase in the future, and there is the possibility of more frequent use by larger air carrier and corporate jet aircraft, it is important that proposed developments of noise sensitive land uses in the vicinity of the airport be carefully considered by the City of Visalia and Tulare County.

Source: Ms. Wanda Kennedy, Airport Manager, Visalia Municipal Airport.

Porterville Municipal Airport

Porterville Municipal Airport is owned by the City of Porterville. The city has contracted with a private airport concessionaire to provide on-airport services and airport management. Located about 3 miles southwest of Porterville near Avenue 128 and Road 232, the facility is classified as a General Utility Airport. The primary runway (30-12) is 6000 feet long. A 4000-foot cross-wind runway (25-7) is designated as abandoned by the City of Porterville Airport Master Plan. About 80,000 annual operations occur at the airport. Two flight school and aircraft charter FBO's and a California Division of Forestry (CDF) fire suppression operation are located at the airport. About 55 single-engine and 10 twin-engine aircraft along with 3 helicopters are based at the airport. During the fire season 3 to 6 fire suppression aircraft may be based at the field. Fire suppression aircraft

Figure 3-2 Visalia Municipal Airport



Scale: 1 inch = 2000 feet

BBA

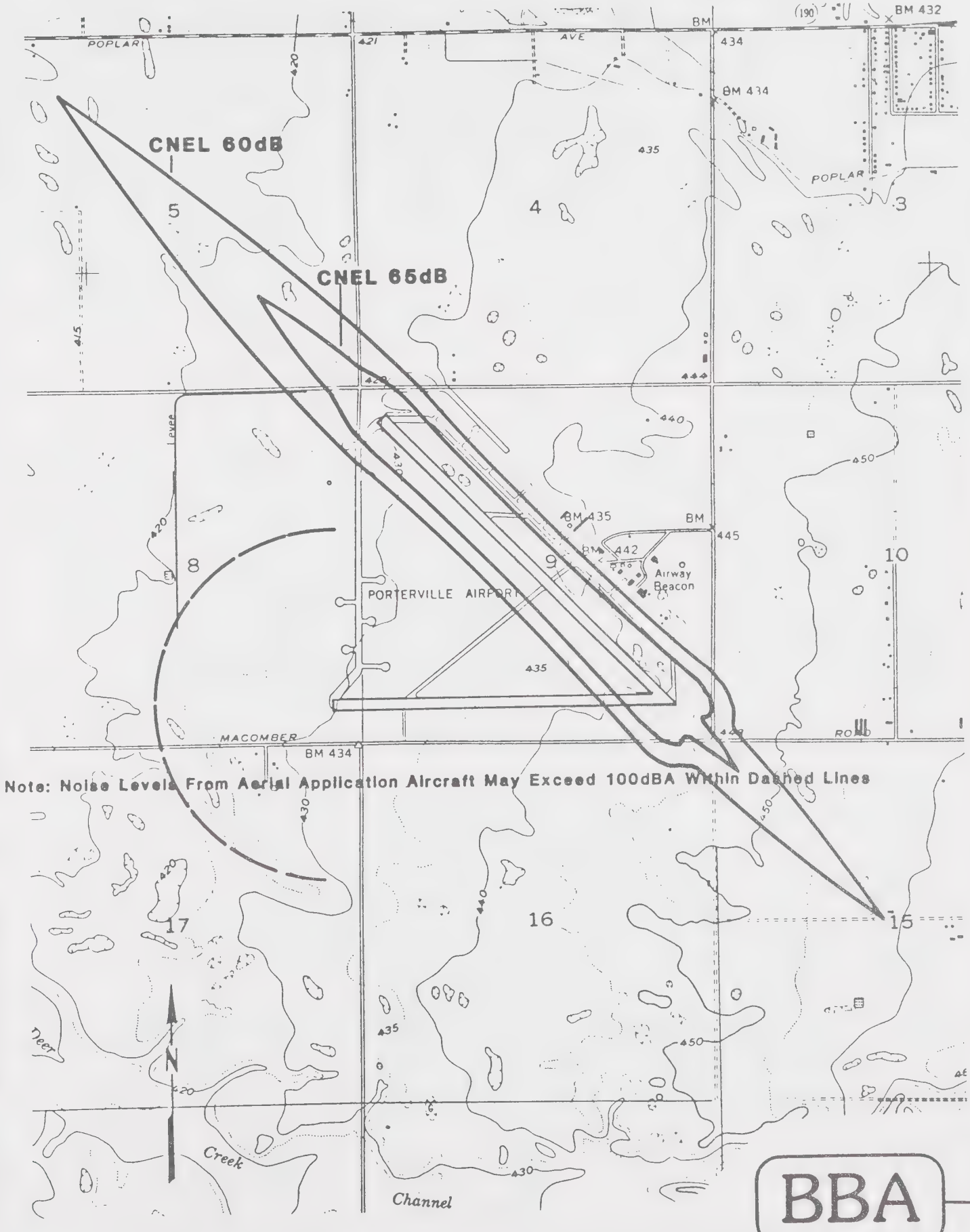
commonly include DC-4's, DC-6's, DC-7's and B-17's, depending on which firm has contracted with CDF. In addition to operations provided by based aircraft, transient corporate jets commonly use the field. On a typical busy day 5 or 6 of these jets may use the field. Although aerial application aircraft are not based at the field, the airport is occasionally used as a staging area for these aircraft. Approximately 70% of airport operations occur on Runway 30. About 75% of operations at the airport occur during the daytime hours (7:00 a.m. - 7:00 p.m.), 20% during the evening hours (7:00 p.m. - 10:00 p.m.) and 5% during the nighttime hours (10:00 p.m. - 7:00 a.m.). A standard left hand pattern is used on runway 30-12. Land uses adjacent to the airport include agricultural, commercial, industrial and recreational uses. Spinners Raceway is located on City property adjacent to the airport. Based on reported operational information, 60 and 65 dB CNEL contours were prepared for existing annual average operations at the airport as shown in Figure 3.3 and Appendix B of the Policy Document. Also shown in Figure 3-3 and Appendix B of the Policy Document are areas at the west end of the abandoned cross-wind runway where maximum noise levels from individual departures by aerial application aircraft could be expected to exceed 100 dBA directly under the aircraft, should the runway be reopened.

Sources: Mr. Lee Abbott, Airport Restaurant Manager and Tulare County Aviation Element and Airport System Plan.

Tulare Municipal Airport (Mefford Field)

Mefford Field is owned and managed by the City of Tulare. Located about four miles southwest of the City of Tulare near the intersection of U.S. Highway 99 and Avenue 200, the airport is classified as a Stage 1, Basic Utility Airport. The one runway at the airport is 3900 feet long. About 49,000 annual operations occur at the facility. About 57 single-engine general aviation aircraft are based at the airport. Of these, about 4 are rated for more than 4 passengers. Also based at the facility are 5 twin-engine aircraft and 3 helicopters. Four aerial applicator (crop duster) businesses having a total of 9 fixed-wing and 2 rotary wing aircraft are located at the airport. It is estimated that about 70% of airport operations occur to the northwest on Runway 31. It is also estimated that about 70% of aircraft use the airport during the daytime hours (7:00 a.m. to 7:00 p.m.), 25% during the evening hours (7:00 p.m. to 10:00 p.m.) and 5% during the nighttime hours (10:00 p.m. to 7:00 a.m.) A standard left hand pattern is utilized for operations that occur on both runway headings. General aviation operations are encouraged to climb to about 800 feet above ground level and turn north over South K Street. Land uses located to the east of the airport include the Tulare Country Club

Figure 3-3 Porterville Municipal Airport



Note: Noise Levels From Aerial Application Aircraft May Exceed 100dBA Within Dashed Lines

BBA

Scale: 1 Inch = 2000 Feet

and golf course. The Elk Bayou Park is located south of the airport. Commercial uses border the north and west sides of the airport along S.R. 99. The 1972 Master Plan for the airport included a noise contour map in terms of the Noise Exposure Forecast (NEF) scale. 60 and 65 dB CNEL contours based on the above-described annual average operational information were prepared for airport operations as shown in Figure 3-4 and Appendix B of the Policy Document. Also shown in Figure 3-4 and Appendix B of the Policy Document are areas off the ends of the runway where noise levels from departures by individual aerial application aircraft could be expected to exceed 100 dBA directly under the aircraft.

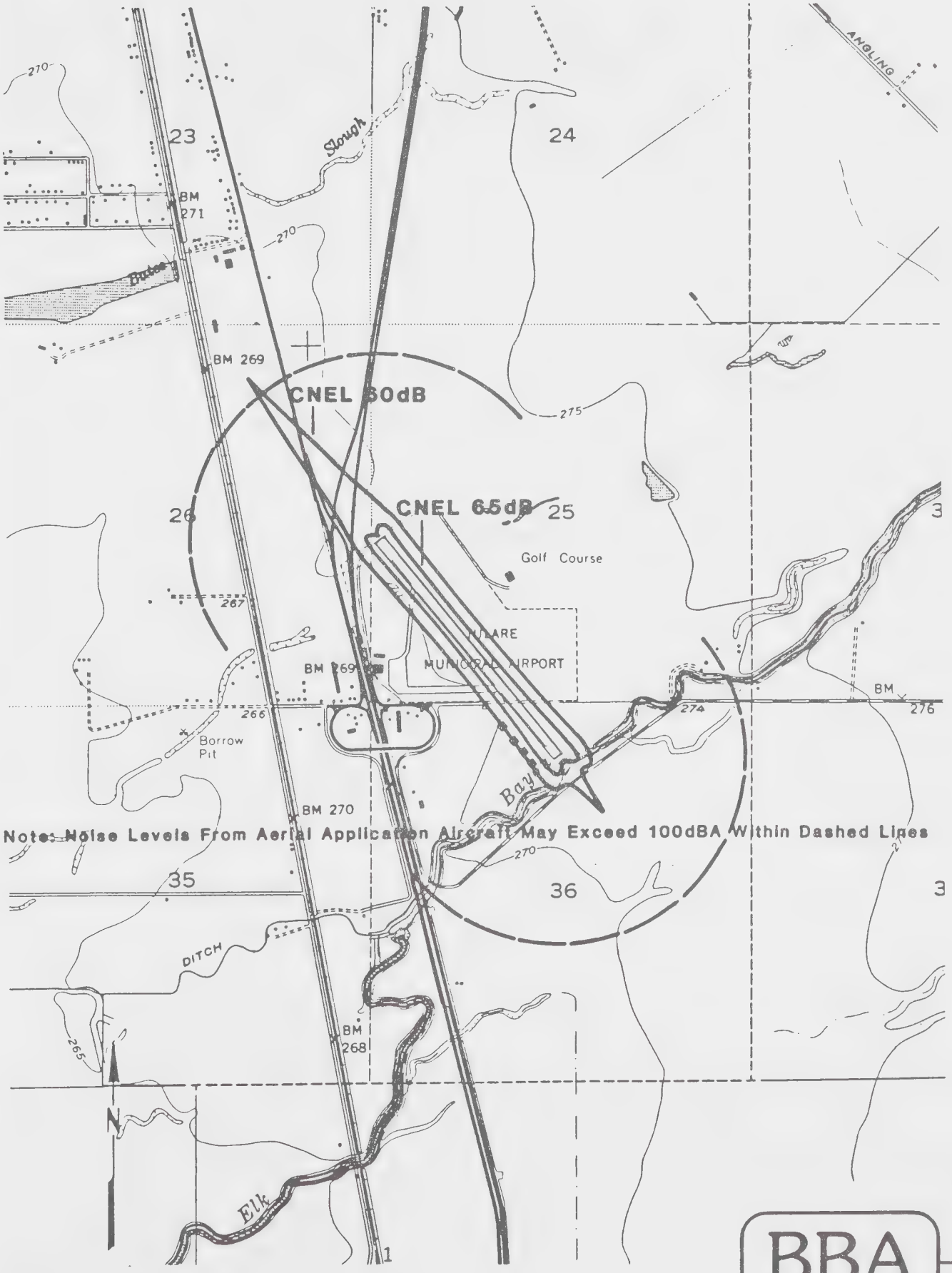
Sources: Mr. Bing Fry, Fry Aviation, Inc. and Tulare County Aviation Element and Airport System Plan.

Woodlake Airport

The Woodlake Airport is privately owned and managed but is open to public use. Located about two miles south of the City of Woodlake off State Route 245, the airport is classified as a Stage 1, Basic Utility Airport. The one runway at the airport is 3355 feet long. The airport owner was unable to estimate the number of annual operations at the airport but believes that the 22,000 operations indicated in the Tulare County Aviation Element and Airport System Plan is too high. Airplanes based at the airport consist of 31 single-engine and 2 twin-engine aircraft. No rotary wing or aerial application aircraft are based at the facility. However, aerial applicators do use the airport as a staging area 3-4 times a year. It is estimated that departing and landing aircraft use Runway 25, 90% of the time and Runway 7 the remainder of the time. Most aircraft use a standard left hand pattern in departing or landing at the airport. About 95% of aircraft operations occur during the daytime hours. The airport is generally surrounded by agricultural land uses with the exception of some residential uses to the east along the river. Based on the number and type of general aviation aircraft reported to use the facility, the 60 dB CNEL noise contour does not extend beyond airport property. However, it should be noted that maximum noise levels from individual departing aircraft (especially aerial application aircraft) could be expected to result in significant short-term noise impacts in areas near the airport.

Sources: Ms. Thelma Venturella, Owner and Tulare County Aviation Element and Airport System Plan.

Figure 3-4 Tulare Municipal Airport



Note: Noise Levels From Aerial Application Aircraft May Exceed 100dBA Within Dashed Lines

BBA

Scale: 1 Inch = 2000 Feet

Sequoia Field

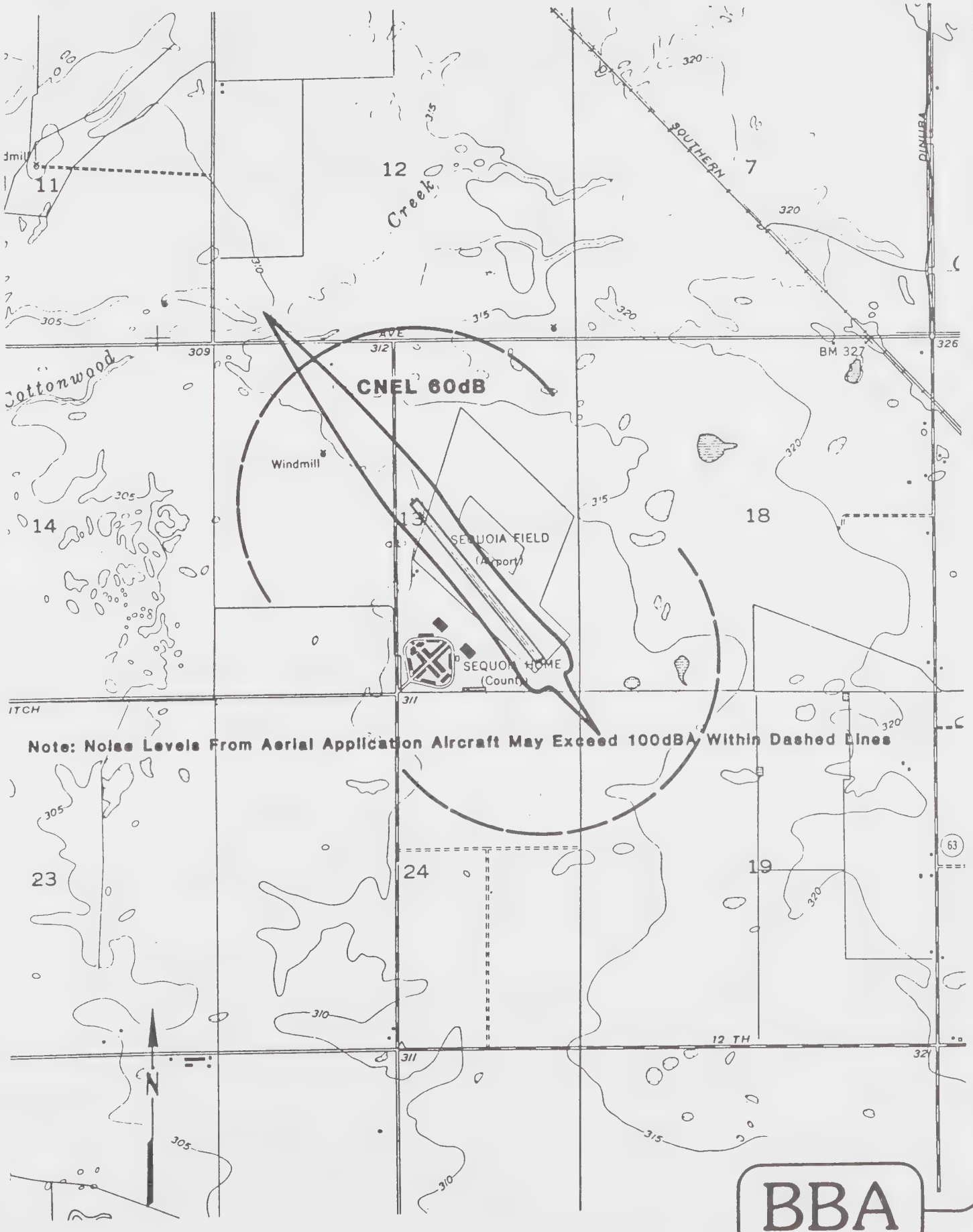
Sequoia Field is a Basic Utility, Stage 1 airport located north of Visalia east of Road 112 and south of Avenue 376. It is owned by the County of Tulare and managed by one of the fixed-base operators. The single airport runway is 3,020' x 60'in size, and is oriented NW-SE (31-13). Total annual operations are estimated at 20-25,000 with approximately 75% of those operations occurring to the northwest on Runway 31. Operations occur between 7:00 a.m. and 7:00 p.m. approximately 70% of the time, between 7:00 p.m. and 10:00 p.m. approximately 10% of the time, and between 10:00 p.m. and 7:00 a.m. approximately 20% of the time (primarily early morning aerial application activity). Approximately 25 single engine propeller, 1 twin engine propeller and 5 rotary wing aircraft are based at the airport. There are presently 2 FBO's at the airport. One is an aerial applicator which utilizes both fixed wing and rotary wing aircraft. The other maintains and repairs large propeller aircraft, including a DC-6 and 2 operable C-123's which are used for fire suppression, air cargo or other types of operations. The C123's utilize 2 jet engines for additional thrust during takeoffs. The large aircraft make a total of approximately 25 departures from the airport per year. Maximum noise levels from such departures and also from departures by aerial application aircraft could be expected to result in significant short-term noise impacts in areas located near the airport as noted in Figure 3-5. Land uses in the vicinity of the airport include agricultural uses, scattered residential uses, an existing Tulare County detention facility and a new detention facility under construction. Several new homes are located near established flight corridors in the vicinity of the airport (west of Rd. 112). Local pilots attempt to avoid existing homes, but future development could result in noise-related land use conflicts, especially if airport operations increase significantly in the future. Figure 3-5 shows the 60 dB CNEL contour for an annual average day, assuming one departure and landing each by a DC-6 and a C-123.

Sources: Mr. Ken Stubbs, IBM, Inc. and Mr. Jack Gilbert, Gilbert Aviation, Sequoia Field.

Alta Airport

The Alta Airport is located between Orosi and Sultana south of Avenue 416 and west of Rd. 116. The airport is classified as Basic Utility, Stage 1. There is one 3,365' x 60' runway with a NW-SE (33-15) orientation. Out of the estimated 15,000 annual operations (thought to be a high estimate by the FBO),

Figure 3-5 Sequoia Field



Note: Noise Levels From Aerial Application Aircraft May Exceed 100dBA Within Dashed Lines

BBA

Scale: 1 Inch = 2000 Feet

80-90% occur to the northwest on Runway 33. There are presently 20 single engine, 2 small twin engine and 1 aerial application aircraft based at the airport. The FBO, an aerial applicator, operates a Grumman Ag Cat with a 600 hp radial engine and 2-bladed propeller. This is a typical aerial application aircraft. The 60 dB CNEL contour shown in Figure 3-6 is representative of annual average operations at the airport. Also noted in Figure 3-6 are areas at both ends of the runway where maximum noise levels from individual departures by aerial application aircraft could be expected to exceed 100 dB directly under the aircraft. There are presently scattered residential and agricultural land uses located around the airport. Local pilots attempt to avoid flying directly over existing residences.

Source: Mr. Carl Trinkle, Trinkle Agricultural Flying Service, Alta Airport.

Harmon Field

Harmon Field is a public airport leased from the County by a fixed-base operator. Located about one mile southwest of Pixley near Avenue 96 and Road 120, the airport is classified as a Stage 1, Basic Utility Airport. The one runway at the airport is 2050 feet long. Two aerial applicators are located at the airport and there are about 9 single-engine general aviation and 6 aerial application aircraft based at the facility. There are presently no twin-engine or rotary wing aircraft at the facility. It is estimated that 5,000-10,000 annual operations occur at the airport. Although a standard left hand pattern is established for the airport, many general aviation aircraft turn right or continue straight after departure. Aerial application aircraft generally turn in the direction of their destination after departure. It is estimated that runway heading 31 is used approximately 90% of the time. Harmon Field is surrounded by agricultural uses, a county corporation yard and by waste water treatment ponds. The 60 dB CNEL contour resulting from operations on an annual average day is shown in Figure 3-7. Also shown in Figure 3-7 are areas at both ends of the runway where maximum noise levels from individual departures by aerial application aircraft could be expected to exceed 100 dB directly under the aircraft.

Sources: Mr. Vic Clark, Earlimart Dusters and Tulare County Aviation Element and Airport System Plan.

Figure 3-6 Alta Airport

BBA

Scale: 1 Inch = 2000 Feet

Figure 3-7 Harmon Field

BBA

Scale: 1 Inch = 2000 Feet

Pruner Airport

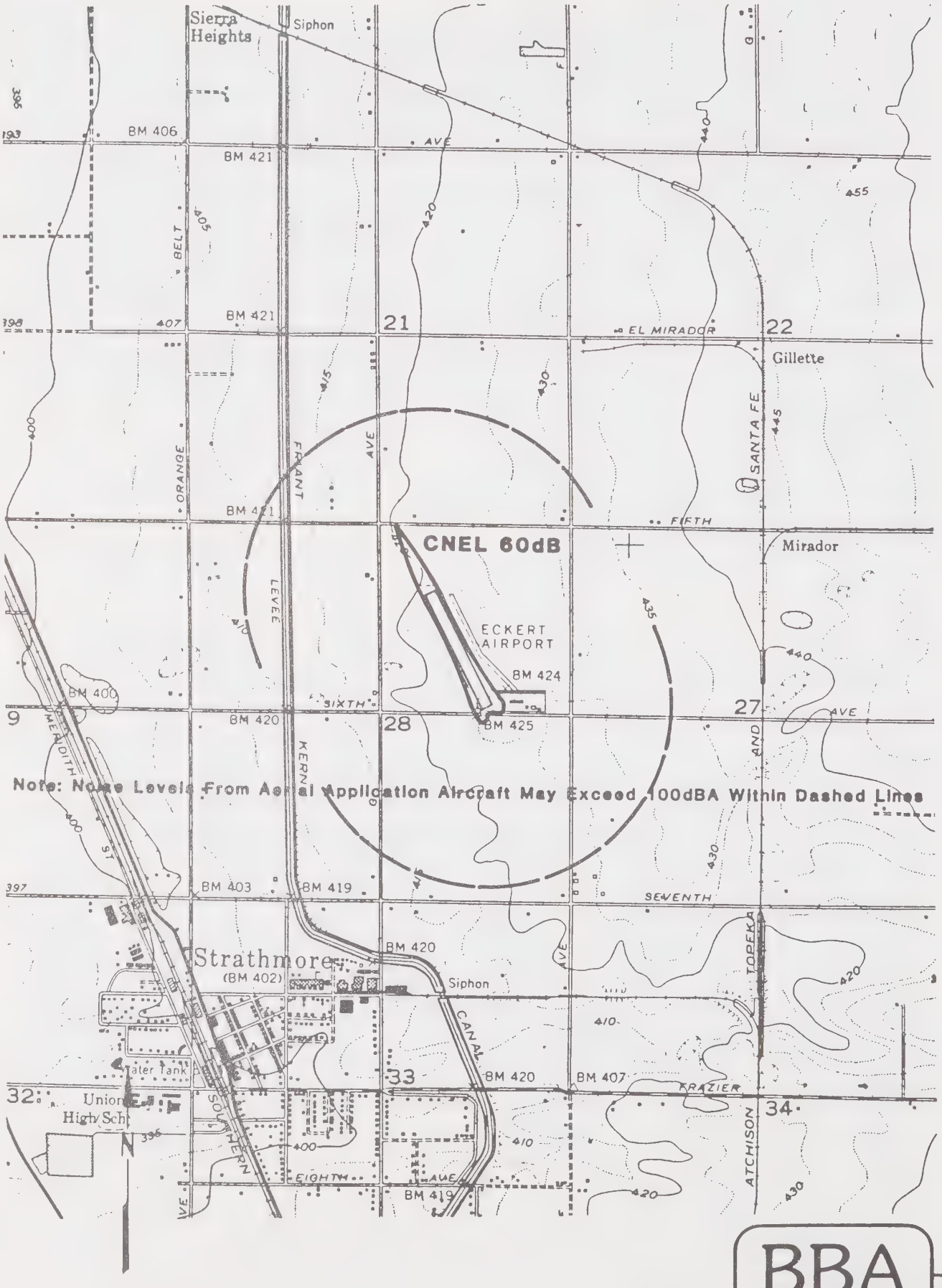
Pruner Airport is privately owned and managed but is open to public use. Located about three miles southwest of Exeter on Road 188, the airport is classified as a Stage 1, Basic Utility Airport. The one runway at the airport is 2250 feet long. The airport caretaker estimates that there are about 2000 annual operations at the facility. There are 10 single-engine aircraft based at the facility. No twin-engine, rotary wing or aerial application aircraft are based at the field. It is estimated that 60% of aircraft operations occur on runway heading 31. Most aircraft utilize a standard left hand pattern in departing from or arriving at the airport. Straight out departures on runway heading 31 are discouraged to avoid flying over a residence located northwest of the runway. No nighttime operations are reported to occur at the facility. Pruner airport is surrounded by agricultural land uses. Based on the number and type of aircraft reported to use the facility, the 60 dB CNEL contour is confined to airport property.

Sources: Mr. Ray Fowler, Airport Caretaker and Tulare County Aviation Element and Airport System Plan.

Eckert Field

Eckert Field is privately owned and managed, but is open for public use. Located about 1.5 miles northeast of the community of Strathmore near Avenue 204 and Road 236, Eckert Field is classified as a Stage 1, Basic Utility Airport. The one runway at the airport is 2050 feet long including the overrun. The airport owner estimates that there are approximately 7000 annual operations at the airfield. Based at the facility are 23 single-engine and 1 twin-engine aircraft. One aerial application business having 2 fixed-wing aircraft is located at the airport. In addition to the based aerial applicator, several other crop dusting businesses occasionally use the air field as a temporary staging area. The field is also occasionally used for aerobatic flying. It is estimated that 80-90% of operations occur to the northwest on runway heading 31. About 90% or more of general aviation aircraft operations occur during the daytime hours. A standard left hand pattern is used by most pilots at the airport. Eckert Field is surrounded by citrus groves. Figure 3-8 depicts noise exposure as defined by CNEL around the airport for an annual average day. Also shown in Figure 3-8 are areas at

Figure 3-8 Eckert Field



BBA

Scale: 1 Inch = 2000 Feet

both ends of the runway where maximum noise levels from individual departing aerial application aircraft could be expected to exceed 100 dBA directly under the aircraft.

Source: Mr. Wendell Eckert, Owner and Tulare County Aviation Element and Airport System Plan.

Green Acres Airport

The Green Acres Airport is located north of Goshen Avenue east of Road 108 within the City of Visalia. The airport is classified as a Basic Utility, Stage 1 airport, and consists of one 2800 foot long runway with a NW-SE (30-12) orientation. There are presently approximately 32 aircraft and 5 ultralights based at the facility. According to the Tulare County Aviation Element and Airport System Plan, there are approximately 20,000 annual operations, although the FBO feels this is considerably higher than what actually occurs at the airport. The FBO operates 2 fixed wing aerial application aircraft, a Cessna Husky (300 hp/3-bladed propeller) and a Leland-Snow Air Tractor (450 hp/2-bladed propeller). Aerial application aircraft generally depart to the northwest on Runway 30 and arrive from the northwest on Runway 12 to avoid concentrated residential areas. Other aircraft operations generally occur in a northwesterly direction on Runway 30 for both landings and takeoffs. A typical busy day for aerial application aircraft could include up to 15-20 departures starting at approximately 6:00 a.m. Land uses in the area surrounding the airport include the Visalia Country Club to the south, a combination of commercial, industrial and residential uses to the east and agricultural uses with scattered residences to the north and west. The airport property is apparently in the process of being sold for residential development purposes. It is unknown how long the airport may continue to operate.

Source: Kaweah Crop Dusters, Inc., and Tulare County Aviation Element and Airport System Plan

3.6 Industrial and Other Major Noise Sources

The production of noise is an inherent part of many industrial, commercial and agricultural processes, even when the best available noise control technology is applied. Noise production within an industrial or commercial facility or

in close proximity to many types of agricultural equipment is controlled indirectly by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise emissions from such operations have the potential to exceed locally acceptable standards at nearby noise sensitive land uses.

Noise control issues focus upon two objectives: to prevent the introduction of new noise-producing uses in a noise sensitive area, and to prevent encroachment of noise sensitive land uses upon existing noise-generating facilities. The first objective can be achieved by applying performance standards to proposed new industrial or other noise generating uses. The second objective can be met by requiring that new noise sensitive uses in proximity to existing noise sources include receiver-based mitigation measures to ensure compliance with the same performance standards.

Noise exposure information for the industrial and other major noise sources identified by Tulare County and the incorporated cities of Tulare County as potentially noise significant was developed from operational data obtained from source operators, and from noise level measurements conducted at reference locations around the noise sources. Consistent with the L_{dn} methodology, a 10 dB penalty was added to noise levels occurring at night (10:00 p.m. - 7:00 a.m.) where nighttime operations occur. In discussing future operations with source operators it was readily apparent that too many variables exist to allow meaningful projections of future activity or noise levels.

Following are discussions of industrial and other major noise sources which were identified through questionnaires completed by the County and by the incorporated cities of the County. The discussions are intended to provide generalized information concerning the relative noise impacts of each source, and to identify specific noise sources which should be considered in the review of development proposals where potential noise conflicts could result. The following discussions do not represent a comprehensive accounting of all noise sources in the county. It is probable that unidentified industries or other major noise sources exist in the county which generate significant noise levels and could result in noise-related land use conflicts.

Generalized 60 dB L_{dn} contours have been prepared for industrial or other major noise sources when such contours are located off the property occupied by the source. These contours are included in Appendix B of the Policy Document. It is intended that the generalized contours contained within Appendix B of the Policy Document be used as a screening device by Tulare

County and the incorporated cities of the County to determine when potential noise-related land use conflicts may occur and site-specific studies may be required to properly evaluate noise at a given noise-sensitive receiver location.

3.6.1 Manufacturing Plants

Waterman Foundry

The Waterman Foundry, located at 515 "G" Street in Exeter, primarily manufactures metal castings for water control valves. The plant generally operates from 6:00 a.m. to 11:00 p.m. year round but is busiest from March to June. The major noise sources associated with the factory are the vibrating tables, chipping guns, grinders and fork lifts. A horn that signals shift changes and work breaks is blown several times a day. Noise level measurements were conducted around the perimeter of the plant on January 12, 1987. On the west side of the plant about 95 feet from the edge of the plant building, noise levels ranged from 62 to 75 dBA, with an L_{eq} of 65 dB. The major identifiable noise sources at this location were grinders operating almost constantly at levels ranging from 62-63 dBA, fork lifts ranging from 67-70 dBA and miscellaneous banging and clanging that ranged from 65-75 dBA. At various locations east of the plant at about 100 feet from the foundry, noise levels ranged from 65-80 dBA. The major sources were blowers, fork lifts, grinders and the vibrating table. On the south side of the plant opposite the crane works, measured noise levels ranged from 65-73 dBA. Sources included grinders, blowers and the vibrating table. Of the equipment identified during the noise measurements, the vibrating table produced the highest levels which ranged from 70-80 dBA at about 100 feet from the equipment. Residential land uses are located to the east and west of the foundry while mixed agricultural and residential land uses are located to the south. Industrial uses are situated to the north of the plant. The location of a generalized 60 dB L_{dn} contour around the plant based upon the above-described hours of operation and noise levels is included in Appendix B of the Policy Document. The City of Exeter should carefully review proposed noise sensitive uses proposed for location near the foundry.

Source: Mr. Stan Surowiec, Foundry Superintendent, Waterman Foundry

Taylor Welding Works

Located at 4146 W. Mineral King Avenue in Visalia, Taylor Welding Works performs welding on trucks and farm equipment. Current operating hours are 8:00 a.m. to 6:00 p.m. The business is enclosed in a sheet metal building. According to the owner, the main noise sources are banging of equipment, movement of trucks and other equipment into and from the business and the air compressor. According to the owner, the business had a "noise problem" a few years ago when it was manufacturing modular homes next to nearby residences. Noise l vel measurements on January 6, 1987 at the western property line of the business resulted in levels ranging from 54-55 dBA. The only audible noise source from the business at this time was the air compressor. Based on this measurement and the operating hours reported by the owner, it is not expected that the 60 dB L_{dn} noise contour would extend beyond the property boundary. Residential uses are located north of the business. Commercial uses and S.R. 198 border the business on the other sides.

Source: Mr. Clyde Taylor, Owner

L.A. Compton Group (Kabo-Karr Corporation)

The L.A. Compton Group facility is located near Goshen Avenue and Road 92 in Visalia. The plant manufactures pre-cast, pre-stressed concrete structures for buildings, bridges and roads. The major noise sources are the air-operated external vibrator and air compressor, cranes and generators. The plant operates from 7:00 a.m. to 5:00 p.m., 5 days a week. Noise levels measured October 29, 1986 ranged from 81-83 dBA at a distance of 100 feet from the vibrator and air compressor. At the same distance from a crane and generator, the measured noise level ranged from 80-85 dBA. At the south property line of the plant noise levels ranged from 50-55 dBA. The 60 dB L_{dn} noise contour is expected to be within the plant property boundary. Industrial uses currently surround the plant.

Source: Mr. Wes Wheater, Plant Superintendent, L.A. Compton Group

Gang Nails Truss Company

This business manufactures trusses for the building trade and is located at the corner of Goshen Avenue and Shirk Road in Visalia. The plant typically operates from 8:00 a.m. to 10:00 p.m. The major noise producing equipment at the plant are nail machines and component cutter saws. Noise levels measured

from the nail machine on October 29, 1986 ranged from 65-70 dBA at 50 feet. Noise levels from the saw at 100 feet ranged from 69-71 dBA. Since the saw and nail machine operate intermittently, the 60 dB L_{dn} noise contour would be expected to be confined to within the company property. Industrial land uses surround the plant.

Reference: Mr. Tim Rouca, Manager, Gang Nails Truss Company

Dinuba Timber Induries

Dinuba Timber Industries is located at the intersection of Road 68 and Avenue 430 about one mile northwest of Dinuba. Important noise sources at the facility are a cogeneration plant, wood waste shredder ("hog") and the sawmill itself. There are several stationary and mobile noise sources associated with the sawmill. The sawmill typically operates from 5:00 a.m. - 1:00 a.m. and the hog is typically used from 7:00 a.m. - 7:00 p.m. The cogeneration plant operates 24 hours a day. Noise level measurements at a nearby residential location about 800 feet north of the cogeneration plant resulted in overall levels ranging from 50-52 dBA when the cogeneration plant, "hog" and sawmill were operating. When only the cogeneration plant operates, noise levels were 1-2 dBA less at the same location. Based on the operating hours provided and the above described noise level measurements, the 60 dB L_{dn} noise level contour would not extend beyond the facility property line.

Source: Mr. John R. Urquhart, Yanke Energy, Inc.

3.6.2 Food Processing Plants

Early California Foods

Early California Foods, Inc. has food processing and olive curing plants located at 315 East Tulare Avenue and at Santa Fe Avenue and K Road in Visalia. The plants operate 24-hours a day for 8-9 months out of the year.

Noise level measurements were made on October 29, 1986 at the East Tulare Avenue plant on the east and west sides of the plant. At about 140 feet east of the plant at the nearest residential property line boundary, the noise level ranged from 69-70 dBA. The noise source was escaping steam from a retort system that is used to cook canned food products. On the west side of

the plant at a distance of about 120 feet, which represents the closest residential property line, the noise level ranged from 59-60 dBA. The source was escaping steam from a steam cleaning device and a conveyor. To the east of the plant the generalized 60 dB L_{dn} noise contour based upon measured levels and reported hours of operation is located at approximately 925 feet from the plant. To the west, the generalized 60 dB L_{dn} contour would be located at about 250 feet from the plant. The food processing plant is surrounded by existing residential uses. At the olive curing plant located at the corner of Santa Fe Avenue and K Road, noise measurements were conducted at a residential location about 1500 feet south west of the plant on October 15 and 20, 1986 during the evening and the morning hours. Noise levels from machinery ranged from 54-59 dBA with an L_{eq} of about 57 dBA. Based upon these levels and a 24-hour per day operation, the generalized 60 dB L_{dn} noise contour is located about 2200 feet from the center of the plant. This distance is representative of an unobstructed noise exposure in a southwesterly direction. Levels in other directions may be greater or less depending upon specific noise sources and local shielding from buildings and other factors. The City of Visalia should carefully consider potential noise impacts from this significant noise source when reviewing proposals which could result in additional incompatible land uses in the area. The generalized 60 dB L_{dn} contours for this facility are included in Appendix B of the Policy Document.

Source: Mr. Horace M. Wells, Production Manager, Early California Foods, Inc.

Lindsay Olive Growers

Located at 650 West Tulare Road in Lindsay, Lindsay Olive Growers cures and cans olives. The plant operates from 6 a.m. to midnight from October through February and from 6 a.m. to 2:30 p.m. the remainder of the year, except for a 6-7 week period during the summer when the plant is closed. The major noise sources at the plant are the boiler, pit burner, and several small pumps. Located near the center of the plant the boiler and pit burner may operate 24-hours a day. Other noise sources associated with the plant are trucks which deliver green olives to the plant from mid-September through mid-November. About 12-15 trucks per day may make deliveries during this time. At the west property line of the plant, about 300 feet from the boiler, the measured noise level was 55-56 dBA. The pit burner was not in operation at the time but was estimated by plant personnel to be about as noisy as the boiler. At the south property line of the plant, the noise level from plant equipment was estimated to be about 46 dBA. Residential land uses abut the olive plant to the west and south while agricultural and industrial uses are located to the north and

east respectively. The approximate location of the generalized 60 dB L_{dn} contour for the plant, during the busy season which is based on estimated noise levels for the simultaneous operation of the boiler and pit burner, are shown in Appendix B of the Policy Document.

Source: Mr. Greg McDonald, Personnel Manager, Lindsay Olive Growers

Knudsen/Kraft Dairy Plant

The Knudsen/Kraft Dairy Plant, located at 715 North Divisadero Avenue in Visalia, processes fresh milk into several dairy products. The major noise producing equipment at the plant are boilers, exhaust fans, and the power plant evaporator. About 12-24 trucks per day bring products into the plant. Currently, the plant is operating at about 2/3 capacity having operating hours from about 4:00 a.m. to 11:00 p.m., 5 days a week. When full capacity is attained in about 1 year, the plant will operate 24 hours a day, 7 days a week. Noise level measurements were made at representative locations around the perimeter of the plant on January 6, 1987. East of the plant near 716 N. Divisadero Street, noise levels ranged from 58-60 dBA. West of the plant near a new triplex located on Leslie Street about 100 feet from Goshen Avenue, the measured noise level was 62-63 dBA from plant operations. Noise level measurements conducted by the Tulare County Health Department, Division of Environmental Health, on July 26 & 27, 1984 at 708 N. Divisadero ranged from 59-61 dBA. At 813 Leslie Street noise levels measured by the Health Department ranged from 54-56 dBA. Based upon the more current noise measurements and the operational infor ation provided by Knudsen/Kraft, the location of the current 60 dB L_{dn} contour was calculated as shown in Appendix B of the Policy Document. The City of Visalia should carefully consider new proposals for noise sensitive land uses near this noise significant facility.

Sources: Mr. Frank Miranda, Chief Engineer, Kraft, Inc. and Tulare County Health Department, Division of Environmental Health.

Ruiz Food Products, Inc.

Ruiz Food Products, Inc. is located near the corner of Bardsley and Blackstone Avenues in Tulare. The firm processes Mexican-style foods. The main noise producing equipment at the plant are an ammonia compressor on the south side of the facility, a refrigeration compressor on the north-east corner of the building and 2-3 refrigerated truck trailers (reefers) on the west end of the building. The plant operates 18 hours a day, but plant equipment runs 24

hours a day. Noise measurements on September 12, 1985 at a distance of 25 feet from the ammonia compressor produced a constant level of 84 dBA. Measurements on October 15, 1986 at 50 feet from the refrigeration compressor produced a level of 67-68 dBA, and at 50 feet from the reefers, the level was a constant 73 dBA. Based upon these levels and the reported hours of operation, the generalized 60 dB L_{dn} contour would be located approximately 250 feet from the plant as shown in Appendix B of the Policy Document. Residential land uses are located to the north of the plant, industrial uses to the west and south of the plant, and commercial and residential uses are located to the east. The City of Tulare should carefully review proposals which could result in placing noise sensitive land uses near this business.

Source: Mr. Tim Eggert, Maintanance Manager, Ruiz Food Products, Inc.

Real Fresh, Inc.

Real Fresh, Inc. prepares sterilized food products. The plant is located at 1211 E. Noble in Visalia. The plant operates Monday through Friday for 24 hours a day. The main noise sources in the plant are boilers and the conveyor system. Noise level measurements at a distance of about 100 feet east of the plant on October 31, 1985 resulted in levels of about 62-63 dBA. At the closest residential interface to the plant, which is about 300 feet to the west, the measured noise level ranged from 52-53 dBA. A generalized 60 dB L_{dn} contour for the operation is shown in Appendix B of the Policy Document.

Source: Mr. Jack McGlashen, Plant Manager, Real Fresh, Inc.

Riverbend Products, Inc.

Located near the corner of State Route 63 and Avenue 368, Riv ~b d Products, Inc. processes citrus and tomatoes into various produ ts. The tomato season lasts from July through about mid-September. The citrus season is year-round depending upon demand. The plant operates 24-hours a day. The main noise sources are the steam venturis, elevator, cooling tower and truck traffic. According to the plant manager, the plant is busiest in the summer and may be expected to produce the highest noise levels at that time. Noise levels measured at the plant's southern property line on January 6, 1987 ranged from 50-51 dBA. Based on that measurement and reported operating hours, the 60 dB L_{dn} contour is not expected to extend beyond the plant's property line. The plant is surrounded by agricultural property. The closest residence is

located a few hundred feet to the south. Due to possible significant variations in noise levels due to seasonal conditions, Tulare County should carefully review development proposals which could result in future noise-related land use conflicts.

Source: Mr. Sam Senadenos, Plant Manager

Dairyman's Cooperative Creamery

Located at 400 south "M" Street in Tulare, Dairyman's Cooperative Creamery processes fresh milk into a number of dairy products. The major noise producing equipment, which operate almost constantly, are fans, blowers, evaporators, cooling towers, compressors, boilers, product elevators and a natural gas-fired cogeneration engine. Two diesel engines that are used as standby electrical generators are tested every week. The plant operates 24-hours a day, 7 days a week, year round. Additionally, about 120-140 trucks enter and leave the plant daily. Noise levels on three sides of the plant were measured on January 6, 1987. On the north side of the plant, about 160 feet from cooling towers, evaporators and the cogeneration engine, the noise level was a steady 64 dBA. On the east property line of the plant, noise from air conditioning compressors was a steady 57 dBA. On the south side of the plant, adjacent to the County Fairgrounds, the level was 61-62 dBA. The noise source at this location was steam from a still evaporator. The approximate location of the generalized 60 dB L_{dn} contour, based upon the above-described noise level data and hours of operation is shown in Appendix B of the Policy Document. Mixed residential and commercial land uses abut the plant on its north and east sides, and the County Fairgrounds are located to the south of the plant. Commercial and industrial land uses are located to the west of the plant. The City of Tulare should carefully review proposals which could result in the placement of noise sensitive land uses near the creamery.

Source: Mr. Lee E. Blackely, Senior Vice President, Dairyman's Cooperative Creamery

Walnut Dryers/Hullers

On October 15, 1986, noise level data was collected from the Phil Moodey walnut huller at Road 156 and Avenue 280, the Blain Farming nut shelling operation at 1240 East Caldwell Avenue and the Sequoia Walnut Growers Association facility at Ben Maddox Road and Goshen Avenue in Visalia. These facilities are believed to be representative of nut drying and hulling

operations in the County. The dominant noise source at the Phil Moodey facility was the blower which separates the nuts from the stems, leaves and other materials. This facility operates a few hours a day. Constant noise levels of 77-78 dBA were measured at 100 feet from the blower. Mr. Moodey's huller operates only a few weeks a year during the walnut harvest season. The plant is surrounded by agricultural uses. Roof mounted fans were the dominant noise source at the Blain Farming facility. All other noise producing equipment is enclosed within the building. Constant noise levels of 76-78 dBA were obtained at a location 100 feet west of the plant. The plant operates from 8:00 a.m. to midnight during the harvest season and from 8:00 a.m. to 4:00 p.m. during the remainder of the year. Agricultural uses currently surround the plant. The dominant noise sources at the Sequoia Walnut Growers Association plant are a metal conveyor belt and escaping steam. At a distance of 100 feet from the north side of the building, noise levels ranged from 68-69 dBA. The plant operates from 8:00 a.m. to 5:00 p.m. for approximately 6 weeks a year. The plant is currently surrounded by industrial uses.

Visalia Citrus Packers

The Visalia Citrus Packers facility is located at the corner of Race and Tipton Streets in the City of Visalia. The plant generally packs oranges from 8:00 a.m. to 5:00 p.m. May through November. Shipping and receiving generally occurs 24-hours a day. Noise sources associated with the business are forklifts, idling and slow moving trucks, and a refrigeration unit located on the east side of the fruit receiving building. The equipment located within the building is not audible on the outside. At a residential location on Tipton Street opposite the fruit receiving building, noise levels from propane fork lifts moving bins of fruit ranged from 62-72 dBA. At a distance of 50 feet from an idling truck, the noise level was a constant 71 dBA. The refrigeration unit was not operating at the time. Based on the reported operating hours and noise levels recorded on January 16, 1987, it is not expected that the 60 dB L_{dn} contour would extend beyond the property boundary. When the refrigeration unit on the east side of the fruit receiving building operates, which is reported to occur about 30 days a year, noise impacts on the east side of the plant are likely to be greater than observed during the survey.

Source: Mr. Bob Bellar, Manager Visalia Citrus Packers.

Kaweah Citrus Association

Kaweah Citrus Association is a citrus packing house located southwest of Lemon Cove on Road 236. The packing house operates approximately 10 months out of the year (November-September) from 7:00 a.m. to 5:00 a.m. 5-6 days per week. Major noise sources outside the building are refrigeration equipment and compressors associated with the cold storage facility, bin dumping equipment, forklift movements around the plant and truck loading activities. Truck loading occurs between 7:00 a.m. and midnight. All processing and packing equipment is located inside the building. Measurements conducted on January 12, 1987 indicated that noise levels from refrigeration units and compressors on the south side of the cold storage building are approximately 66-68 dBA at 100 feet. At approximately 300 feet from the bin dumping area, noise levels from the open door of the packing house and from bin dumping and stacking activities ranged from 54-55 dBA. At 100 feet from an idling diesel truck in the loading area, the noise level was 60 dBA. Based upon the above-described hours of operation and noise level data, the 60 dB L_{dn} contour is confined to the property with the exception of the south and east side of the building where the contour extends across the railroad tracks to a distance of approximately 475 feet from the center of the location of the refrigeration equipment. The packing house is presently surrounded by agricultural and a few scattered residential land uses.

Source: Mr. Richard Milligan, Manager, Kaweah Citrus Association.

3.6.3 Municipal and Institutional Noise Sources

City of Porterville Waste Water Treatment Plant

The City of Porterville waste water treatment plant is located off Grand Avenue south of Henderson Avenue and west of Prospect Street in the City of Porterville. Major noise producing equipment, which operate almost continuously, are three large blower engines (two of which are in operation at any time) enclosed in a building and several small unenclosed pumps. Intermittent noise is created by a standby generator which is tested 1/2 hour per month, and by a loader which is used about 8 hours a month to remove sewage sludge. A new sewage effluent pump station will be built within the plant grounds during the spring of 1987. The pump station is expected to include additional noise producing equipment. Noise levels from plant equipment measured on January 6, 1987 near its north gate on the north side of Grand Avenue, which is reportedly near the City's property line, ranged from

52-53 dBA. According to plant management, noise levels from the plant will probably be greater during the summer when the doors of the blower engine enclosure building are opened for greater ventilation. Based on the above measurements and reported operating hours, it is expected that the current 60 dB L_{dn} contour for winter operation (building doors closed) will not extend beyond the plant property. Summer operations and the new pump station may produce increased noise levels that would extend the 60 dB L_{dn} contour beyond City property.

Source: Mr. Don Proctor, Project Manager, PSG

Sierra View Hospital, Porterville

The Sierra View Hospital is located at the intersection of Putnam Avenue and Jaye Street in the City of Porterville. According to the Director of Plant Operations, the chief noise sources associated with the hospital are air conditioning equipment located on the southern end of the hospital and sirens from approaching ambulances. According to hospital policy, ambulances turn off sirens one block from the hospital. Noise measurements of the air conditioning system were made at the southern property line of the hospital on January 6, 1987. Based on these measurements, the 60 dB L_{dn} contour is not expected to extend beyond the hospital property line. Since heavier loads are imposed on the air conditioning system in the summer, higher noise levels may result from that equipment during that time.

Source: Mr. Paul Smith, Director of Plant Operations, Sierra View Hospital

Tulare County Landfill, Road 80 , Visalia

Noise monitoring of a solid waste landfill operated by the Tulare County Public Works Department near Road 80 and Avenue 328 was conducted January 6, 1987. About 1100-1200 refuse trucks use the landfill each month. According to the County Public Works Department, this is the largest landfill in the County. The chief noise sources associated with the landfill are trucks and automobiles entering and leaving the landfill, and the heavy equipment used to manage and cover the refuse. The dominant noise sources were an Ingersoll-Rand Model 750 Landfill compactor and a Caterpillar D-7 dozer which were operating on the working face of the landfill. The County's Fiat-Allis Model 261B Scraper was not in use at the time. At a distance of about 300 feet from this equipment, noise levels ranged from 63-68 dBA. Noise from refuse trucks and other vehicles in the landfill were not perceptible while this equipment

was operating. The posted operating hours of the landfill are 8:00 a.m. to 4:00 p.m., 7 days a week, year-round. Assuming that most of the heavy equipment activity takes place near the central part of the landfill, it is not expected that the 60 dB L_{dn} contour would extend beyond its boundaries.

Source: Mr. Roger Hunt, Tulare County Public Works Department.

Electric Pumps on Water Wells

Noise level measurements of two water wells powered by 50 h.p. electric motors were conducted by BBA on October 14, 1986. The wells were located on East and West Ash Avenues in the City of Farmersville. At a distance of 25 feet from the well at East Ash Avenue the noise level was a steady 57 dBA. When air was being released from the pressure tank the combined noise level from the motor and air release was 69 dBA. At a distance of about 60 feet from the well on West Ash Avenue (closer measurements were not possible due to the fence around the well site) the noise level was 57 dBA. According to the City of Farmersville Public Works Department, the pump operates an average of 20 minutes per hour throughout the year. The distance to the 60 dB L_{dn} contour for the East and West Ash Avenue pumps is 83 and 41 feet, respectively.

Electric Storm Water Lift Pumps

Noise levels from the 5 h.p. storm water lift pump located on the corner of Front Street and Linnel Avenue in the City of Farmersville, were measured on October 14, 1986. At a distance of 25 feet from the pump, the level was 69 dBA. Since the pump runs sporadically, cumulative noise exposure as defined by L_{dn} for this source would be insignificant for persons located closer than approximately 100 feet from the pump. However, noise levels would be potentially annoying in these areas while the pump is operating.

Outdoor Recreational Complexes

Due to the time of year the survey was conducted, no outdoor recreational complexes were found to be operating. However, noise levels from other outdoor recreational complexes which including noise produced by the crowd and local traffic have been evaluated for proposed softball diamonds and tennis courts in other areas. Noise levels have been found to vary significantly depending on what activities are taking place during the game. Maximum noise levels have ranged from 65 to 70 dBA at a distance of about 200 feet from a

softball diamond due to yelling and clapping by players and spectators. Due to the sporadic nature of activities at most outdoor recreational complexes, cumulative noise exposure as defined by L_{dn} is typically insignificant. However, the potential for annoyance exists due to the time of day (typically the evening hours) such facilities are used. Steps should be taken to avoid the development of nearby noise sensitive land uses without appropriate receiver based mitigation.

3.6.4 Sand and Gravel Extraction and Processing

Kaweah River Rock Company, Inc.

The Kaweah River Rock sand and gravel extraction and processing operation is located southwest of Woodlake. The plant generally operates 18 hours per day, 5 days per week. The plant occasionally operates 24-hours per day and on Saturdays. Excavation equipment consists of graders, backhoes, loaders, a drag line and off-road haul trucks. At any one time, it is common to have the drag line, backhoe or one of the loaders working in conjunction with the off-road haul trucks. Noise levels at 700 feet from such an excavation operation using a CAT992A loader and 2 CAT 769B trucks on January 12, 1987 ranged from 47.5 to 66.5 dBA with an L_{eq} of 61 dBA. At 1200 feet, the same operation generated noise levels of 46-61 dBA with an L_{eq} of 55 dBA. The processing area of the operation contains 3 crushing and/or screening plants which are used to produce certain products. On January 12, 1986, the processing plant containing one jaw crusher, one cone crusher and four screens was in operation. At 200 feet, the plant produced noise levels of approximately 77 dBA at 150 feet from the jaw crusher. The CAT 988B loader working around the processing plant generated noise levels of 75-80 dBA at 150 feet. Although not part of the Kaweah River Rock plant, there is an asphalt batch plant located in the processing area. During a brief operating cycle on January 12, 1988, the asphalt plant produced noise levels of approximately 71 dBA at 300 feet. The asphalt plant generally starts operation at approximately 6:00 a.m. during the summer months and runs as long as required to fulfill orders for product. It is expected that within the next few years, the excavation area and processing plants will be moved to a new site, south of the existing location.

Source: Mr. Hank Leonard, Manager, Kaweah River Rock Co., Inc., Woodlake

Sequoia Rock Company

The Sequoia Rock Company concrete batch plant is located at East Center Street and Ben Maddox Way. Major noise sources associated with the plant are trucks moving around in the yard and backing up to receive loads in addition to conveyors and other stationary equipment. Vibrators in the hoppers and warning buzzers are audible at times. Noise level measurements were conducted off the property on January 16, 1987. At a point on the opposite side of East Central Avenue about 150 feet south of the batch plant, measured noise levels from idling trucks and stationary equipment ranged from 69 to 79 dBA. At the Southern Pacific Railroad tracks about 170 feet west of the plant, noise levels ranged from 57-60 dBA. Noise from idling and slowly moving trucks was the dominant noise source at both locations. The owner of the batch plant was unwilling to discuss operating hours or other aspects of the business. Based upon file data and considerable experience with other concrete batch plants, it is reasonable to assume that operating hours would generally be from approximately 6:30 - 7:00 a.m. to about 4:00 p.m. Based upon the above-described noise level data and operational assumptions, a generalized 60 dB L_{dn} contour has been prepared as shown in Appendix B of the Policy Document. The City of Visalia should take appropriate actions to ensure that land use remains compatible with this potentially significant noise source.

Vicon

Vicon is a concrete ready-mix batch plant located near the corner of School and Murray Streets in the City of Visalia. Major noise sources at the plant are idling and slowly moving trucks in the batch plant yard in addition to conveyors and other stationary equipment. Vibrators in the hoppers and warning buzzers may also be audible at times. Noise level measurements were conducted off the property on January 16, 1987. At an approximate distance of 100 feet east of the loading area, the noise level from a front loader and plant-related stationary equipment ranged from 75-77 dBA. At a residential location north of the plant on Murray Street plant noise levels ranged from 66-67 dBA. At another residential location on the northwest corner of School and Bridge Streets plant noise levels ranged from 72-73 dBA. The maximum noise level from an air release brake on a truck was 74 dBA at this location. The owner of the batch plant was unwilling to discuss operating hours or other aspects of the business. Based upon experience with numerous other concrete batch plants, it is reasonable to assume that operations generally run from 6:30-7:00 a.m. to about 4:00 p.m. Based upon the above-described noise level data and operating assumptions, a generalized 60 dB L_{dn} contour has been prepared for the plant as shown in Appendix B of the Policy Document.

3.6.5 Agricultural Operations

Wind Machines

Wind machines are found throughout the citrus-growing areas of Tulare County and in some areas where tree fruit, nuts and vegetables (primarily tomatoes) are grown. The machines are generally operated during the late night and early morning hours during the colder nights of the year, although they are test-run at other times. There are a number of different types of wind machines. Most of them have the engine on the ground (referred to as "ground power") although some have the engine (or electric motor) on the top of the tower. Blades are generally 14 to 20 feet in diameter. Engines may use gasoline, diesel or propane. Noise measurements were conducted for a typical ground power wind machine with an internal combustion engine and for a typical electric wind machine with the motor on top of the tower. The ground power wind machine was a National Frost 391 GP with a gasoline fueled 391 cu./in. Ford V-8 engine and an 18' 6" blade. Measurements were conducted at 50 feet from the base of the tower and at approximately 350 feet from the base of the tower. At 50 feet, noise levels were dominated by the unmuffled engine, and were a constant 91-92 dBA regardless of the position of the blade. At 350 feet, noise levels were caused by a combination of the engine and the blade, and ranged from 61 to 71 dBA depending upon the orientation of the blade. The highest levels occurred when the blade was facing the microphone. According to the wind machine owner, this particular machine is typical of approximately 90 percent of the wind machines in the area. The electric wind machine had a 75 h.p. motor mounted on top of the tower and a blade of approximately 14 feet in diameter. At 50 feet, noise levels were dominated by the blade and ranged from 73 to 87 dBA depending upon blade orientation. At 350 feet, noise levels were also dominated by the blade and ranged from 56 to 67 dBA. During periods of wind machine use, there may be many machines in simultaneous operation. The average number of wind machines for a properly-protected orchard is one for each ten acres.

Source: J.B. Farms, D Bar J Ranch, Orosi and Orange Cove.

Tulare Growers Cotton Gin

Tulare Growers Cotton Gin is located on the north-east corner of Blackstone Street and Cartmill Avenue north of Tulare. The plant usually operates 24 hours a day from mid-September to mid-December. Noise levels measured on

November 3, 1986 at a distance of 120 feet from the northern side of the gin ranged from 74-77 dBA, with an L_{eq} of 75 dBA. The calculated distance from the gin to the 60 dB L_{dn} contour is about 1410 feet. Noise levels projected for the gin are representative of worst-case conditions without adjustments for shielding by the building or other factors. The main noise sources are the gin stands which separate the cotton fiber from the seeds, and the electric motors and blowers in the plant, The gin is currently surrounded by agricultural land.

Source: Ms. Shirley Rybinkar, Manager, Tulare Growers Cotton Gin

Diesel Engines on Wells

Diesel or gasoline-powered engines on water wells were not observed to be operating in Tulare County during the study period. Based upon file data developed from other studies, a diesel or gasoline pump will produce noise levels of approximately 75-85 dBA at 50 feet if properly muffled. Unmuffled engines can be significantly louder.

Cumulative noise exposure as defined by L_{dn} would depend on how many hours a day the engine is operated. For an engine which produced 80 dBA at 50 feet, the distance to the 60 dB L_{dn} contour would be approximately 1000 feet if the pump operated 24 hours per day. For this reason, such stationary diesel or gasoline powered engines may be a significant source of noise on agricultural wells if there are nearby noise sensitive land uses.

Aerial Application Aircraft (Crop Dusters)

Aerial application aircraft are frequently used to spray crops or to spread seed or fertilizers. There are many types of fixed or rotary wing aircraft used for aerial application including aircraft with reciprocating, radial and turbine engines and 2 or 3 bladed propellers. Horsepower ratings generally range from 300 to 1200. Most of the noise impacts generated by aerial application aircraft occur as the result of propeller noise and the low altitude that the aircraft are typically flown. Noise level measurements in Tulare County and elsewhere have shown that the noisiest designs are the medium to high horsepower engines with two-bladed propellers. Most of the highest horsepower engines utilize a three-bladed propeller which is significantly quieter due to lower tip speed. Measurements conducted east of Pixley on October 17, 1986 of a Piper Brave (400 hp/3-bladed propeller)

indicated that noise levels from this aircraft while applying cotton defoliant ranged from 85-88 dBA at about 600 feet to 97-100 dBA at 50 feet. Measurements on January 16, 1987 near Alta Airport of a Grumman Ag Cat (600 hp/2-bladed propeller) indicated a maximum noise level of approximately 103 dBA at 100-150 feet overhead. Measurements on January 16, 1987 at the Tulare Municipal Airport indicated that maximum noise levels from a 800 hp Turbine Thrush with a 3-bladed propeller range from 90-95 dBA at approximately 100 feet overhead. As noted in the sections addressing individual airports in this document, single event maximum noise levels for aerial application aircraft can be very significant in areas near airports where these aircraft are frequently operated.

Miscellaneous Farming Operations

Farming operations are common throughout nearly all areas of Tulare County with the exception of some mountainous areas and heavily developed areas within the larger communities. Some of the more common noise sources associated with farming operations within Tulare County include tractors, harvesting equipment and spray equipment. In order to document noise levels generated by such equipment, noise levels were measured at various locations throughout the county. Examples of measured levels include a cotton picker operating at approximately 500 feet away which produced a noise level of 58 dBA. A larger diesel-powered wheel tractor pulling a 20-foot disk generated levels of 72-75 dBA at approximately 150 feet. An International 574 diesel-powered wheel tractor (smaller than the above) pulling a furrowing appliance generated levels of 69-79 dBA at approximately 50 feet. Also measured were a Randall weed sprayer with a National one cylinder diesel engine which produced 74-75 dBA @ 50 feet, an FMC Bean 267 engine-driven speed sprayer (345C.i.V8) which produced 92-97 dBA at 50 feet depending upon orientation, and an Aerofan 391 speed sprayer which generated 74-76 dBA at 100-300 feet. The above-described levels do not include all types of farm equipment, but do not present a range of levels which may be expected. A good general rule-of-thumb is that a diesel engine will produce noise levels of 75-85 dBA at approximately 50 feet. Although farming operations occasionally generate significant noise levels, such levels generally do not last more than a few hours at a given location unless a stationary piece of equipment such as a pump master (or engine) is involved. For this reason, significant cumulative noise exposure as defined by L_{dn} would not generally be expected to result from typical farming operations within Tulare County.

Sources: Various locations and individuals throughout Tulare County.

3.6.6 Special Interest Noise Sources

Fast Food Loudspeakers

Noise levels from several fast food loudspeakers were measured on October 14, 1986. An attempt was made to position the sound level meter microphone directly in front of the speakers. Unavoidably, the noise level data included idling automobile engines. Table 3-2 provides a range of the noise levels measured during the survey.

TABLE 3-2

Fast Food Loudspeaker Noise Data

Location	* Noise Level
McDonalds, Mooney Blvd. - Visalia	60-62 dBA
Wendy's, Mooney Blvd. - Visalia	72-77 dBA
Kentucky Fried Chicken, Prosperity Ave. - Tulare	62-65 dBA
Burger King, Prosperity Ave. - Tulare	61-63 dBA

* Measured at 25 feet from loudspeaker

Source: Brown-Buntin Associates, Inc.

Truck Stops

The truck stop surveyed is located east of S.R. 99 about about 1/2 mile south of Merritt Drive in Traver. It consists of a 7-bay service station, laundromat, shower and restaurant. Noise level measurements at a distance of about 100 feet from three idling and slowly moving trucks in the service station ranged from 61-67 dBA with a L_{eq} of 63.3 dB. It should be noted that since most truck stops are located close to busy freeways, the predominant noise source as measured at or near the truck stop will be produced by freeway traffic, not by trucks within the truck stop.

Portwood Hydroelectric Plant

The Portwood Hydroelectric Plant is privately owned and is located on the North Fork of the Tule River about 6 miles north of Springville. The plant consists of four 75 KW turbines and one 25 KW turbine for a total capacity of 325 KW. The turbines are enclosed in a concrete structure. Depending on the flow of water in the North Fork of the Tule River, the plant typically operates 5 to 7 months per year. Noise level measurements of turbine noise were made on January 9, 1987. At this time only the 25 KW turbine was operating. At a distance of about 25 feet from the enclosure, turbine noise ranged from 53-54 dBA. Based on this measurement and the operating conditions reported by the owner, the 60 dB L_{dn} contour would be located within 25 feet of the turbine enclosure with the 25 KW turbine in operation. When two or more turbines are in operation, it is probable that higher noise levels would be produced. The plant is presently surrounded by land owned by the owner/operator of the plant.

Source: Ms. Rita Portwood, Owner

Wood Cutting

Noise generated by wood cutting activities is primarily caused by chainsaws. Noise may also be generated by wood splitting machines which are hydraulic rams powered by a small gasoline engine similar to what is typically found on a lawn mower. Noise levels generated by typical wood cutting activities were evaluated by measuring noise levels from a chainsaw which was being used to cut sections of wood approximately 10 inches in diameter. The chainsaw was an Echo 650 with a 24 inch bar. According to the operator, this is typical of the larger saws used to cut firewood. At 25 feet, the saw produced noise levels ranging from 85 to 92 dBA depending upon orientation of the saw and load on the engine. At 50 feet, the saw produced noise levels of 75 to 84 dBA depending upon the same factors. It should be noted that the frequency content of the noise generated by most chainsaws is quite annoying to most persons due to the sensitivity of the ear to the range of sound which is produced by such saws.

Source: J.B. Farms, Orange Cove.

Kennels

The Humane Society animal shelter located at Frontage Road 99 and Avenue 280 was selected as a site representative of a kennel. Noise level measurements around the shelter were conducted on October 14, 1986. Since the shelter is enclosed, some measurements were taken directly in front of opened doors to simulate an unenclosed kennel. At a distance of 50 feet from the enclosure, noise levels from barking dogs ranged from 55-68 dBA with doors closed, and 65-79 dBA in front of open doors. As defined by L_{eq}, the noise level at 50 feet from the enclosed building was 63.8 dBA and 71.4 dBA in front of the open doors.

Source: Tulare County Humane Society

Auto Body Shops (Mr. Auto Body, 340 W. Naranjo, Woodlake

This particular auto body shop is presently used only occasionally. Hours of operation are 8:00 a.m. to 5:00 p.m. Major sources of noise include a compressor which cycles on and off depending upon compressed air demand. Grinders and other hand tools are used, but are confined to within the building. The shop is surrounded by Naranjo Blvd. to the south, commercial uses to the east and west and residential uses to the north. There is a 5 foot high concrete block wall separating the residential uses and the shop. Maximum noise levels from the compressor at a distance of 25 feet were approximately 63 dBA. At the north property line, inside the block wall, the measured noise level was 56 dBA. Based upon the present and anticipated use of the shop, the 60 dB L_{dn} contour lies well within the shop property.

Source: Mr. Robert Aguilar, owner, Mr. Auto Body, Woodlake

Car Crusher (Pick-A-Part Auto Wrecking, Fresno)

Although this facility is not located within Tulare county, noise level data were obtained to assist the County and Cities in the review of development proposals which could include such a facility. The facility studied is an Aljon portable car crusher mounted on a large truck trailer. It is powered by a Perkins diesel engine which operates hydraulic rams. Major noise sources associated with the operation are the diesel engine which powers the crusher and the large loader (also an Aljon) which is used to load and position cars within the crusher. Noise level measurements at 100 feet from the crusher (approximately 40-50 feet from the loader at times) resulted in levels of 75-

87 dBA. The crusher alone generated levels of 76-78 dBA. The L_{eq} at this location after 10 minutes of loading and crushing was 79.1 dBA. Based upon a 9 hour operating day starting at 7:00 a.m., the 60 dB L_{dn} contour would be located at approximately 550 feet from the crusher. Maximum levels at this location would be expected to range from 65-72 dBA. Extended hours of operation or nighttime operations (10:00 p.m. - 7:00 a.m.) would result in a greater distance to the 60 dB L_{dn} contour.

Source: Plant Manager, Pick-A-Part Auto Wrecking, Fresno

4.0 COMMUNITY NOISE SURVEY

As required by the Government Code and ONC Guidelines, a community noise survey was conducted to document noise exposure in areas of the County containing noise sensitive land uses. The following noise sensitive land uses have been identified within Tulare County.

1. All residential uses
2. Schools
3. Long-term care medical facilities, such as hospitals, nursing homes, etc.

Noise monitoring sites were selected to be representative of typical conditions in the unincorporated areas of the County where such uses are located. A total of 70 monitoring sites were selected as shown in Figure 4-1. A combination of short-term and continuous noise monitoring was used to document existing noise levels at these locations during the month of November, 1986. At 60 of the community noise survey sites, noise levels were sampled for approximately 15 minutes during each of three periods of the day and night so that reliable estimates of L_{dn} could be prepared. The data collected during the short-term sampling program included the L_{eq}, maximum noise level, minimum noise level and a description of noise sources which were audible at the monitoring sites. Continuous noise monitoring was conducted at 10 of the community noise survey sites to document fluctuations in noise levels over a typical 24-hour period within the different types of noise environments of the County (City, small town, rural area, mountain area, etc.) Noise level data collected during continuous monitoring included the L_{eq}, maximum noise level, and the statistical distribution of noise levels for each hour of the sample period. Noise level data collected during the community noise survey are summarized in Table 4-1. Typical hourly fluctuations of noise levels at the sites where continuous noise monitoring was conducted are

shown in graphic form in Figures 4-2 through 4-11. Hourly L_{eq} values shown in Figures 4-2 through 4-11 are representative of energy average noise levels and are very sensitive to single events, such as vehicle or railroad passbys or aircraft overflights. L_{50} values are representative of the level exceeded 50% of the sample period. L_{90} values are representative of the level exceeded 90% of the sample period and are a good indicator of background or residual noise levels.

The community noise survey results indicate that typical noise levels in noise sensitive areas of the incorporated and unincorporated areas of Tulare County ranged from 29-65 dB L_{dn}. As would be expected, the quietest areas are those which are removed from major transportation-related noise sources and local industrial or other stationary noise sources. Good examples of these quiet areas are rural-valley and mountain residential areas such as Alpaugh, Springville and Panorama Heights, and recreational areas such as Balch Park. It is anticipated that noise levels in recreational areas would be somewhat higher during the summer season when such areas receive greater use. The noisier locations monitored during the survey were in areas located near state highways (Pixley, Earlimart, etc.), major county industries (Lindsay, Site #6) or railroads (Goshen). Noise levels in some areas were higher than would normally be expected such as in the rural area near Pixley (Site #63) where cotton picking machines were in use during the survey period. Maximum noise levels observed during the survey were generally caused by local automobile traffic or heavy trucks. Other sources of maximum noise levels included occasional aircraft overflights, railroad operations, barking dogs and nearby industrial/commercial equipment or machinery. Background noise levels in the absence of the above-described sources were caused by distant traffic, wind in the trees, running water, birds and distant industrial or other stationary noise sources.

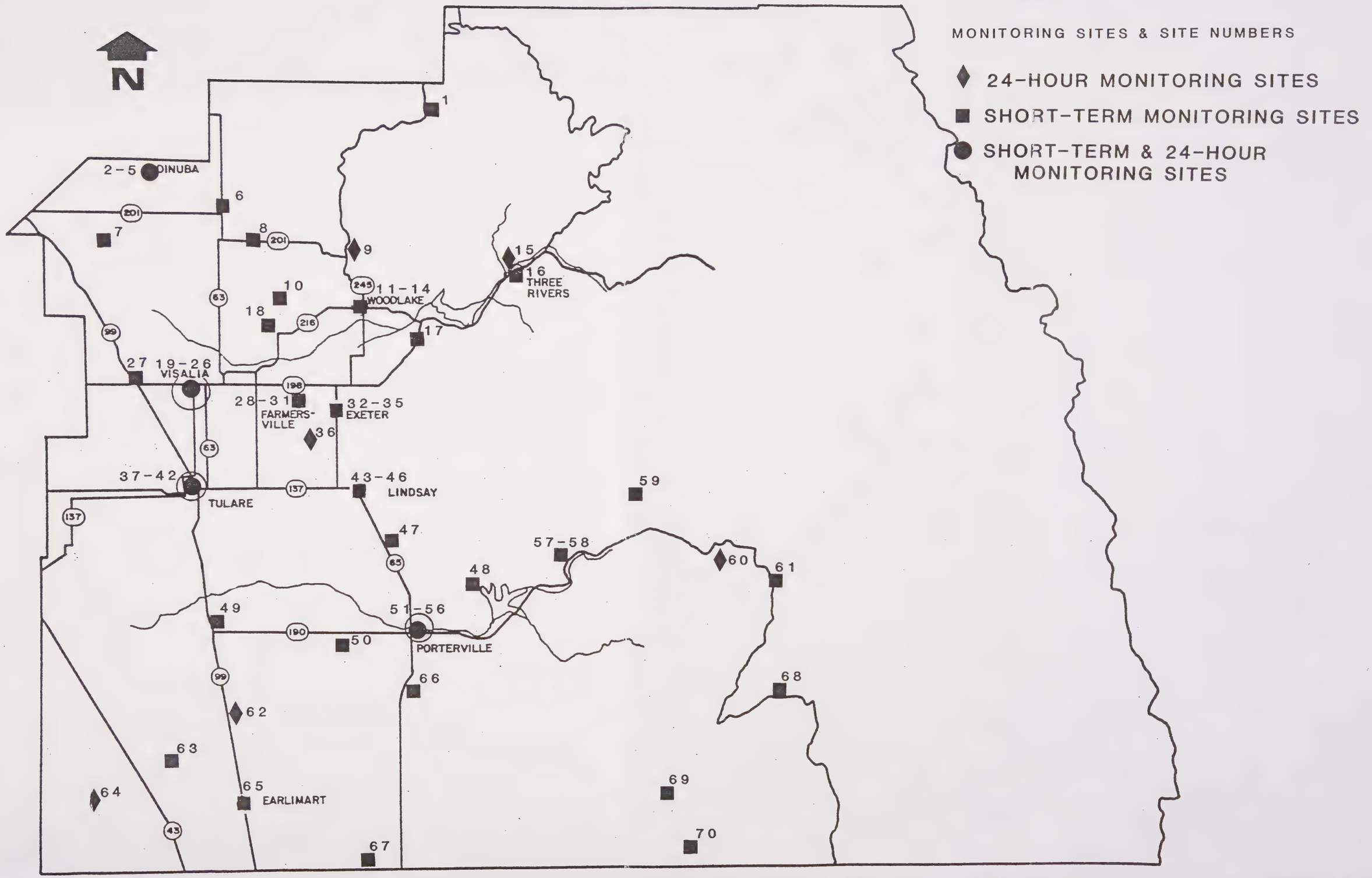
In the foothill and mountain areas of Tulare County, background noise levels are generally very low. Exceptions to this occur near major roadways or along rivers or streams where running water may be a significant source of sound. Eleven of the measurement sites included in the community noise survey were within the area designated by Tulare County as Foothill or Mountain Planning Areas. Table 4.2 presents a summary of noise level data obtained during the survey at these locations.

As reported in Table 4.2, daytime L_{eq}'s at the 11 foothill and mountain sites ranged from 28 dBA at Panorama Heights to 59 dBA in Three Rivers near the Kaweah River. Nighttime L_{eq}'s ranged from 20 dBA at Ponderosa to 59 dBA at the same location in Three Rivers. When the relatively high L_{eq}'s for running water at the Three Rivers site are excluded, the mean (averaged on an energy

basis) L_{eq}'s for the locations listed in Table 4.2 are 44 dBA during the day and 35 dBA at night. If the 4 sites located within the Foothill Development Corridors designated by the County are excluded, the mean daytime L_{eq} drops from 44 to 42 dBA, but the mean nighttime L_{eq} remains at 35 dBA. Such values may be compared to mean L_{eq} values of 53 dBA during the day and 49 dBA at night for the entire 70 sites covered by the community noise survey.

Table 4.2 also reports that estimated L_{dn} values in the foothill and mountain areas of the County range from 29 to 54 dB. When the Three Rivers site located near the river is excluded, L_{dn} values range from 29 to 51 dB. Such L_{dn} values may be compared to a range of 35-65 dB for the survey sites located outside the Foothill and Mountain Planning Areas.

One factor that is difficult to quantify, but is often mentioned by persons who reside in rural or mountain areas, is the greater expectation for a quiet living environment by persons who have made the choice to live away from urbanized areas. This factor, coupled with the quiet existing background noise levels discussed above, greatly increases the likelihood that noise from a new noise generating land use will be perceived by residents of these areas as a significant intrusion over existing conditions.



BBA/QUAD

COMMUNITY NOISE SURVEY MONITORING SITES

4.1

TABLE 4-1

SUMMARY OF COMMUNITY NOISE SURVEY DATA

Site #	Location/Community	Level, dBA L_D	L_N	L_{max} (Source)	L_{min} (Source)	Estimated L_{dn}*
1	Sierra School - Badger	42	23	72 (truck)	20 (wind)	40 dB
2	Brent & Lindara - Dinuba	51	44	64 (children)	36 (traffic)	50 dB
3**	673 Newton - Dinuba	48	42	72 (aircraft)	29 (traffic)	50 dB
4	Ventura St. & College Ave - Dinuba	49	39	61 (traffic)	37 (fans)	49 dB
5	Vassar Ave. & Greene Ave - Dinuba	49	45	65 (traffic)	37 (industry)	52 dB
6	Lee Rd. & Ave. 467 - Cutler	49	41	63 (auto)	35 (pump)	50 dB
7	Kate Rd. & Ave 378 - Linden	53	39	69 (traffic)	35 (pump)	52 dB
8	St. Mary's Church, Ave 384 - Yettem	53	36	60 (traffic)	32 (pump)	51 dB
9**	37650 Millwood - Elderwood	49	44	79 (dog)	25 (traffic)	52 dB
10	Rd. 156 on Ave. 340 - Rural Ivanhoe	46	30	56 (traffic)	27 (pump)	45 dB
11	Redwood & Crestwood - Woodlake	46	33	63 (traffic)	31 (traffic)	45 dB
12	Cypress & Sequoia - Woodlake	53	38	69 (school bus)	35 (traffic)	52 dB
13	Miller Brown Comm. Park - Woodlake	50	37	64 (truck)	32 (traffic)	49 dB
14	Palm St. @ Ropes Ave. - Woodlake	52	38	64 (traffic)	35 (traffic)	51 dB
15	Eggers Dr., Library - Three Rivers	37	32	46 (bird)	31 (water)	40 dB
16**	42695 Sierra Dr. - Three Rivers	59	59	59 (river)	59 (river)	65 dB
17	Summit Ave & Rd. 244 - Lemon Cove	46	34	55 (traffic)	30 (insects)	45 dB
18	Hawthorne Rd. & Ave. 330 - Ivanhoe	52	40	71 (truck)	37 (fan)	51 dB
19	N. Visalia Community Center	54	45	65 (traffic)	41 (traffic)	54 dB
20	Golden West High School - Visalia	51	36	60 (aircraft)	35 (traffic)	50 dB
21	Turner & Center - Visalia	55	41	61 (truck)	39 (auto)	55 dB
22**	607 Woodland - Visalia	47	40	64 (traffic)	28 (traffic)	48 dB
23	Jefferson Park - Visalia	52	40	62 (traffic)	38 (traffic)	51 dB
24	Willow Glen School - Visalia	57	41	69 (truck)	37 (traffic)	56 dB
25	326 E. Monte Vista - Visalia	46	34	53 (traffic)	33 (industry)	45 dB
26	Victor St. & Jackie St. - Visalia	49	40	67 (traffic)	37 (traffic)	49 dB

TABLE 4-1 (Continued)

SUMMARY OF COMMUNITY NOISE SURVEY DATA

Site #	Location/Community	Level, dBA L_D	L_N	L_{max} (Source)	L_{min} (Source)	Estimated L_{dn}*
27	Rd. 68 & Fig Ave. - Goshen	61	57	73 (traffic)	55 (Fwy 99)	64 dB
28	Hester Near Rose Ave. - Farmersville	52	41	69 (traffic)	40 (traffic)	52 dB
29	N. End, Brundage Ave. - Farmersville	62	41	62 (skill saw)	35 (dogs)	60 dB
30	Jennings Park - Farmersville	49	40	64 (bus)	37 (traffic)	49 dB
31	Ventura & Fresno St. - Farmersville	55	40	65 (truck)	37 (traffic)	54 dB
32	W. End, Betsy Place - Exeter	47	38	60 (dog)	31 (traffic)	47 dB
33	Exeter High School - Exeter	58	47	73 (truck)	43 (traffic)	58 dB
34	Exeter Park - Exeter	55	42	71 (truck)	37 (traffic)	54 dB
35	Quince Ave & Davis St. - Exeter	50	37	64 (traffic)	32 (trafic)	49 dB
36**	18425 Ave. 264 - Exeter	55	41	73 (traffic)	25 (traffic)	54 dB
37	W. End, Washington Ave. - Tulare	47	59	62 (traffic)	56 (Fwy 99)	65 dB
38	Live Oak Park - Tulare	47	54	58 (traffic)	51 (Fwy)	60 dB
39**	798 Mahaleb - Tulare	49	46	86 (dog)	26 (traffic)	53 dB
40	1040 Sycamore - Tulare	51	50	70 (dogs)	40 (birds)	57 dB
41	Mulcahy School - Tulare	54	52	65 (leaf blower)	49 (traffic)	59 dB
42	Hemlock St. & Aspen Ave. - Tulare	55	58	63 (truck)	52 (Fwy 99)	64 dB
43	Orange Ave. & Alameda St. - Lindsay	49	42	59 (traffic)	42 (unknown)	50 dB
44	Lindsay Hospital - Lindsay	46	35	59 (traffic)	33 (fan)	46 dB
45	Stanford Ave. & Samoa St. - Lindsay	45	30	60 (traffic)	30 (traffic	44 dB
46	474 Central Ave. - Lindsay	52	46	60 (traffic)	44 (olive plant)	54 dB
47	Strathmore High School - Strathmore	56	44	69 (traffic)	39 (equipment)	55 dB
48	Rd. 292 S. of Ave. 176 - Strathmore	34	26	48 (birds)	24 (substation)	35 dB
49	Adams Rd. & Klindera Ave. - Tipton	54	56	62 (dog)	47 (traffic)	62 dB
50	S. end of Rd. 190 - Poplar	48	48	65 (rooster)	38 (rooster)	54 dB
51	LDS Church - Porterville	51	47	60 (truck)	44 (traffic)	54 dB

TABLE 4-1 (Continued)

SUMMARY OF COMMUNITY NOISE SURVEY DATA

Site #	Location/Community	Level, dBA L_D	L_N	L_{max} (Source)	L_{min} (Source)	Estimated L_{dn}*
52	W. end, Sandra Lane - Porterville	49	48	55 (dogs)	39 (traffic)	48 dB
53	W. end, Olivewood - Porterville	54	43	65 (truck)	39 (traffic)	54 dB
54	Alley, Lindale & Lotas - Porterville	50	46	65 (auto)	43 (traffic)	53 dB
55	Olive Street School - Porterville	53	50	60 (voices)	45 (dogs)	57 dB
56**	173 Williams - Porterville	55	46	80 (dogs)	29 (traffic)	55 dB
57	West of Fire Station - Springville	53	38	62 (traffic)	37 (water)	51 dB
58	La Colina @ Pleasant Oak -Springville	51	33	68 (motorcycle)	31 (water)	49 dB
59	Balch Park (lower lake) -Tulare Co.	31	22	53 (traffic)	22 (unknown)	31 dB
60**	Camp Nelson Realty, Camp Nelson	40	32	67 (traffic)	25 (water)	41 dB
61	Tamarack Dr. & Aspen Dr. - Ponderosa	42	20	55 (traffic)	19 (unknown)	40 dB
62**	Pixley Fire Station - Pixley	55	57	84 (truck)	37 (Fwy 99)	64 dB
63	Rd. 104 @ Ave. 72 - Earlimart/Pixley	47	30	55 (cotton picker)	25 (unknown)	46 dB
64**	Alpaugh Irrigation District - Alpaugh	53	43	80 (traffic)	25 (traffic)	53 dB
65	Earlimart Comm. Park - Earlimart	53	54	62 (auto)	51 (traffic)	60 dB
66	First Presbyterian Ch. - Terra Bella	52	46	59 (traffic)	43 (traffic	54 dB
67	Olive Norwood School - Richgrove	49	47	58 (voices)	43 (traffic)	54 dB
68	Near town entrance - Johnsondale	36	32	50 (traffic)	29 (water)	39 dB
69	R.V. Park - Calif. Hot Springs	48	43	68 (logging truck)	40 (running water)	51 dB
70	Fire Station - Panorama Heights	28	21	40 (barking dogs)	18 (insects)	29 dB

L_D = Average L_{eq} of two 15-minute samples obtained between 7:00 a.m. and 10:00 p.m. except for sites marked with a ** where 24-hour monitoring was conducted.

L_N = L_{eq} for one 15-minute sample obtained between 10:00 p.m. and 7:00 a.m. except for sites marked with a ** where 24-hour monitoring was conducted.

* L_{dn} estimated from L_D and L_N

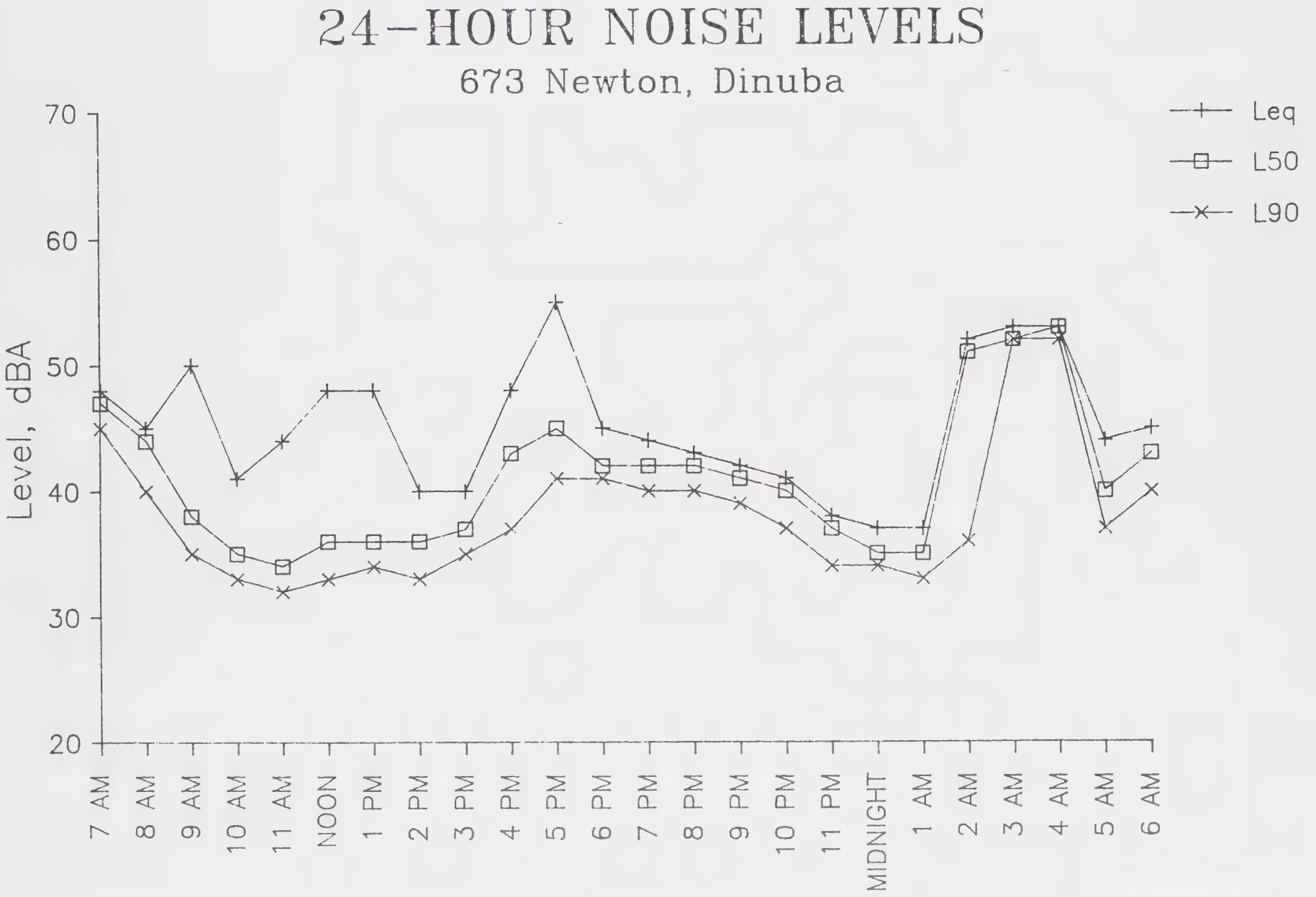
Source: Brown-Buntin Associates, Inc.

TABLE 4.2

SUMMARY OF COMMUNITY NOISE SURVEY DATA
FOOTHILL AND MOUNTAIN AREAS
NOVEMBER, 1986

Location	Level, dBA				Estimated
	L_{eq}(D)	L_{eq}(N)	L_{max}(Source)	L_{min}(Source)	L_{dn},dB*
Badger-Sierra School	42	23	72 (truck)	20 (wind)	40
Three Rivers-Library**	37	32	46 (bird)	31 (water)	40
Three Rivers-42695 Sierra**	59	59	59 (river)	59 (river)	65
Springville-Near Fire Station**	53	38	62 (traffic)	37 (water)	51
Springville-La Colina @ Pleasant Oak**	51	33	68 (motorcycle)	31 (water)	49
Balch Park-Lower Lake	31	22	53 (traffic)	22 (unknown)	31
Camp Nelson-Camp Nelson Realty	40	32	67 (traffic)	25 (water)	41
Ponderosa-Tamarack @ Aspen	42	20	55 (traffic)	19 (unknown)	40
Johnsondale-Entrance to Town	36	32	50 (traffic)	29 (water)	39
California Hot Springs-R.V. Park	48	43	68 (truck)	40 (water)	51
Panorama Heights-Fire Station	28	21	40 (dog)	18 (insects)	29

* L_{dn} estimated from L_{eq}(D) and L_{eq}(N)
** Within a Foothill Growth Corridor



BBA

Figure 4-2

24-HOUR NOISE LEVELS

37650 Millwood, Elderwood - 11/26/86

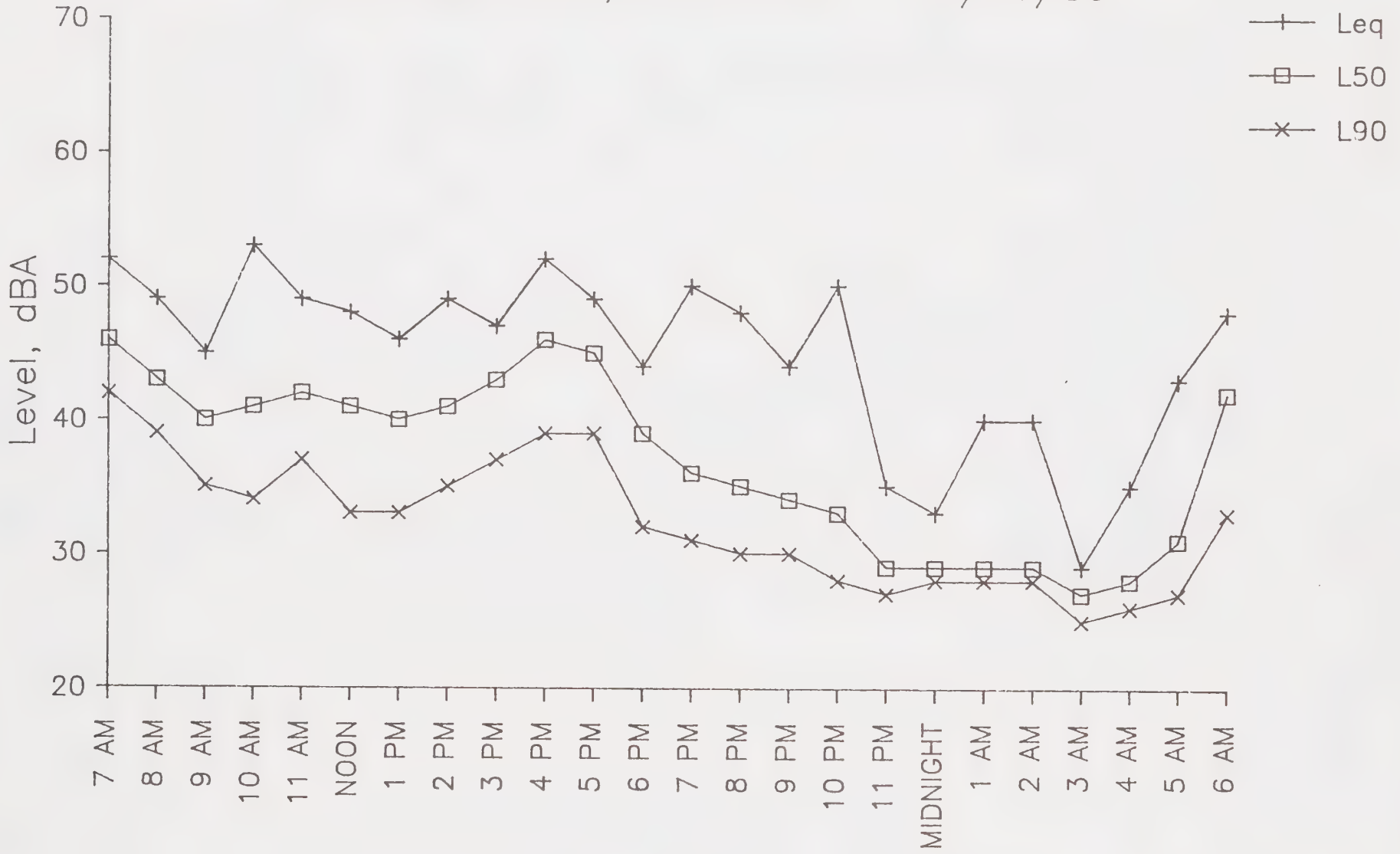
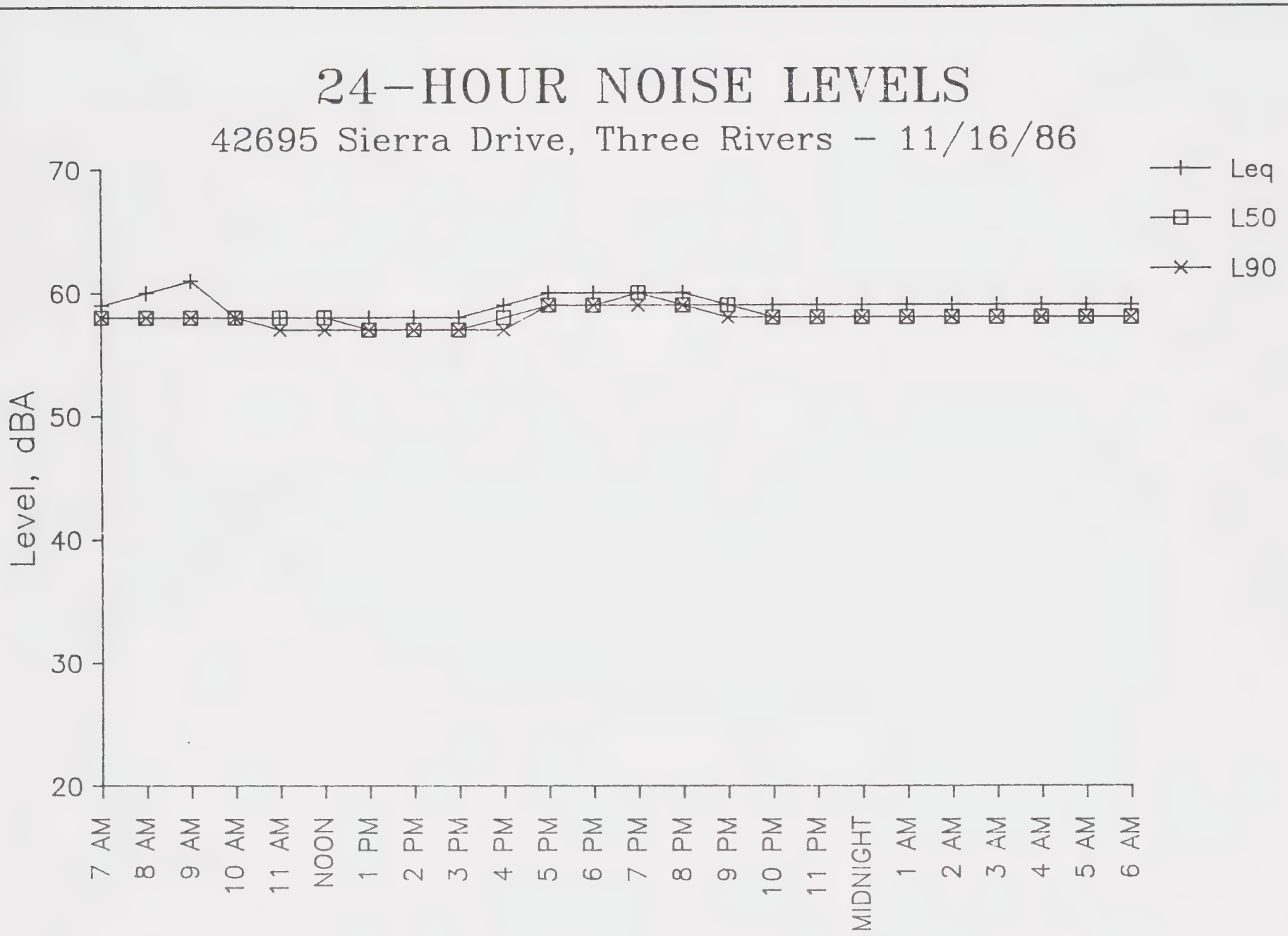


Figure 4-3

BBA



BBA

Figure 4-4

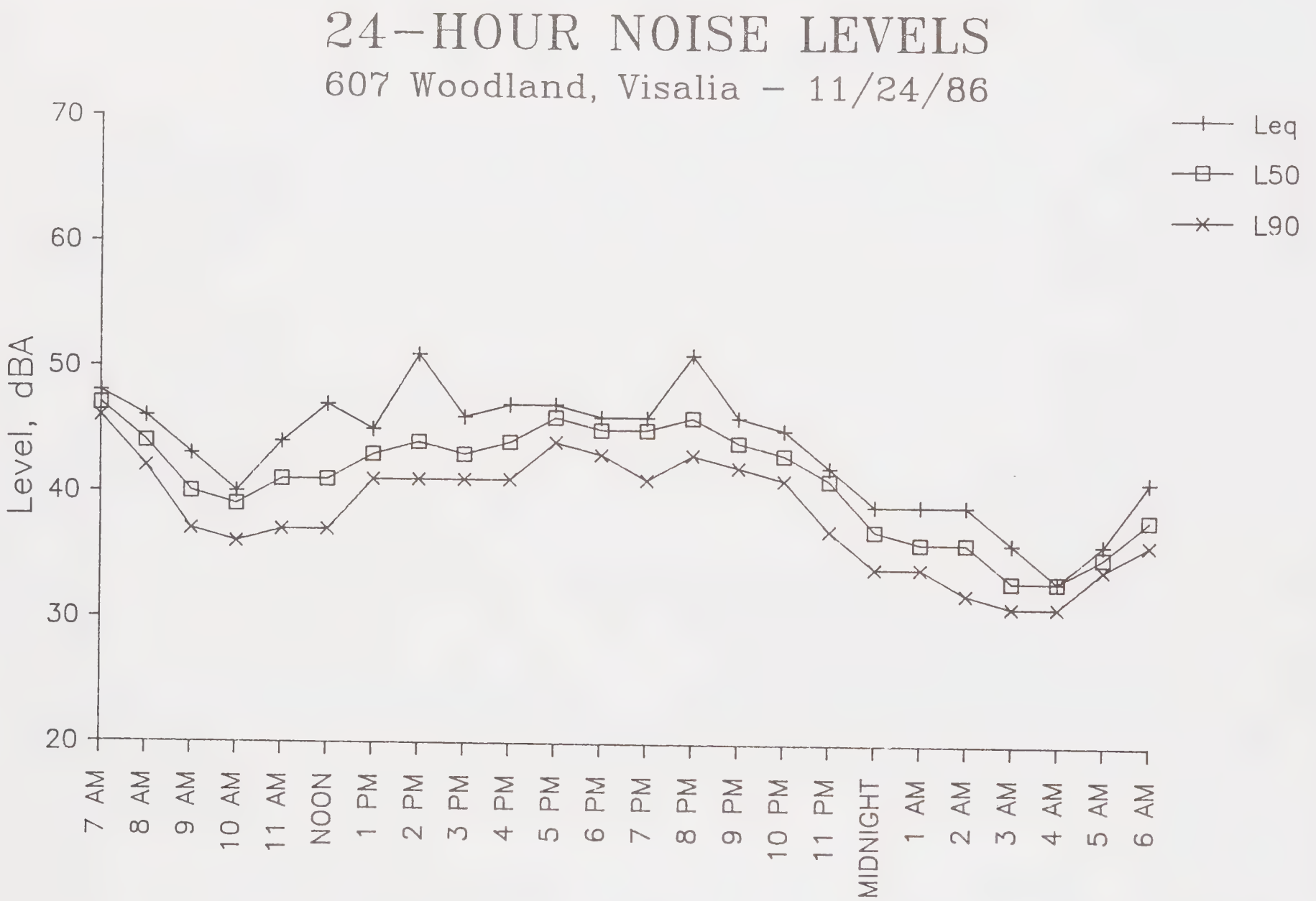
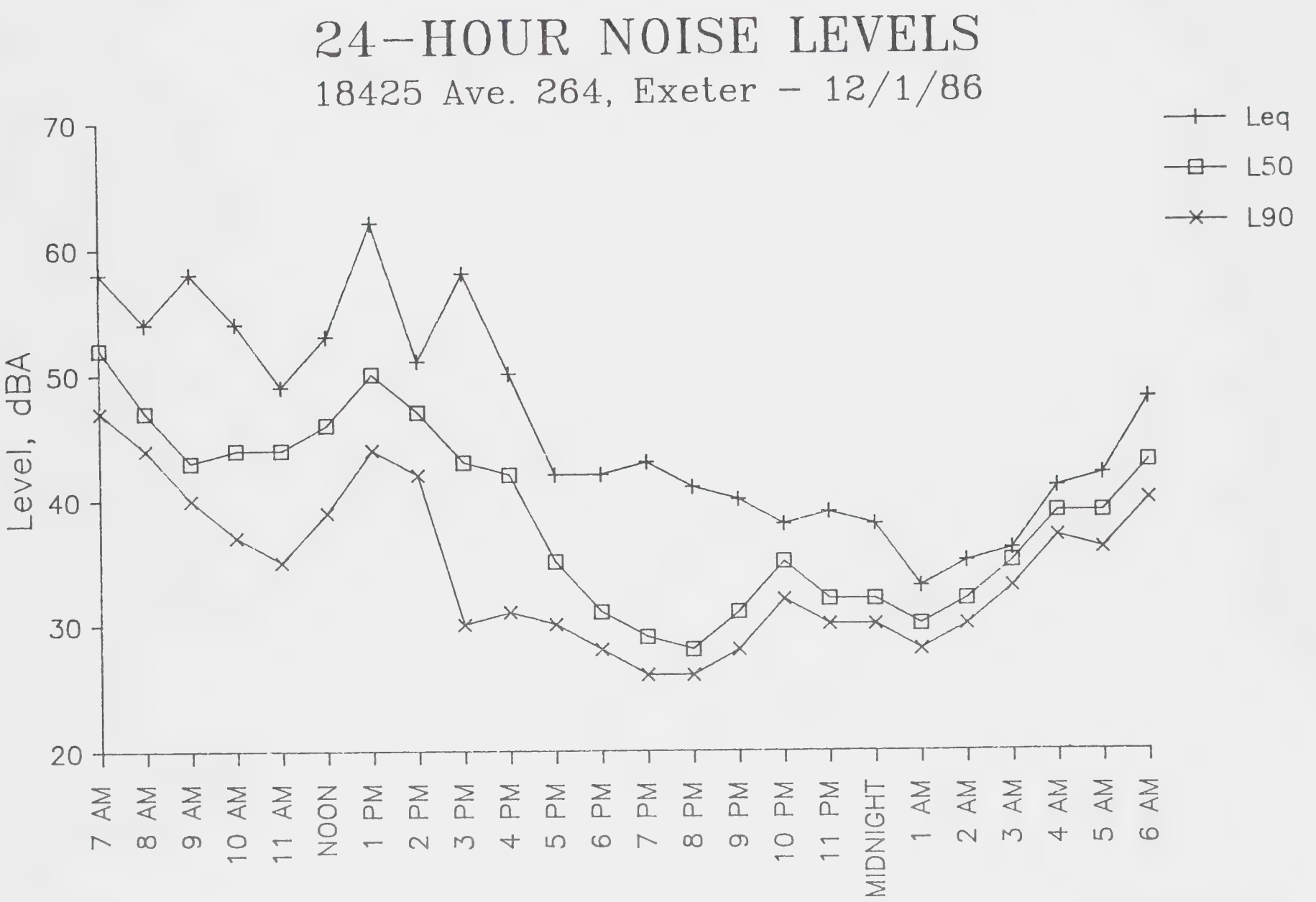


Figure 4-5

BBA



BBA

Figure 4-6

24-HOUR NOISE LEVELS

798 Mahaleb St., Tulare - 11/18/86

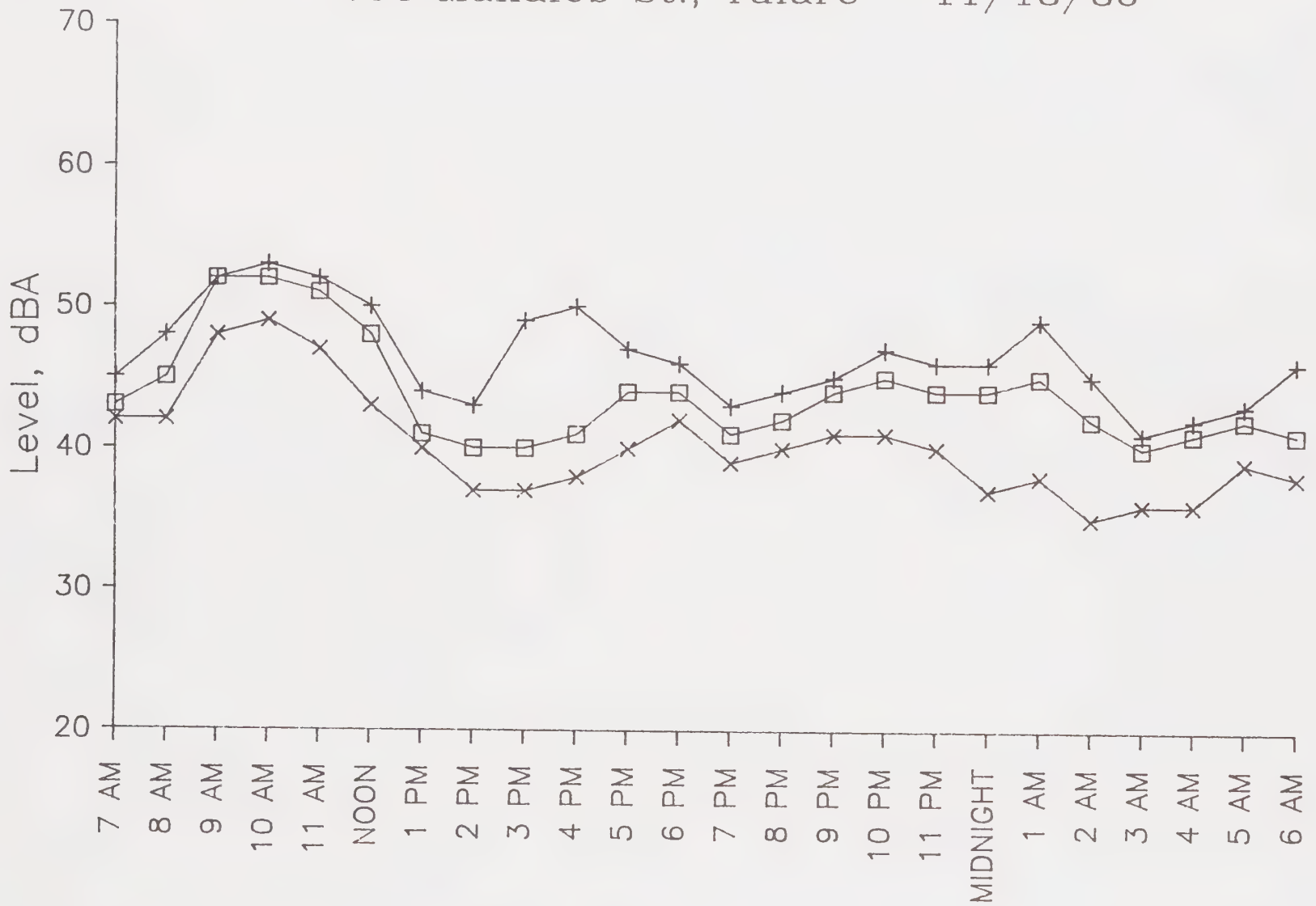
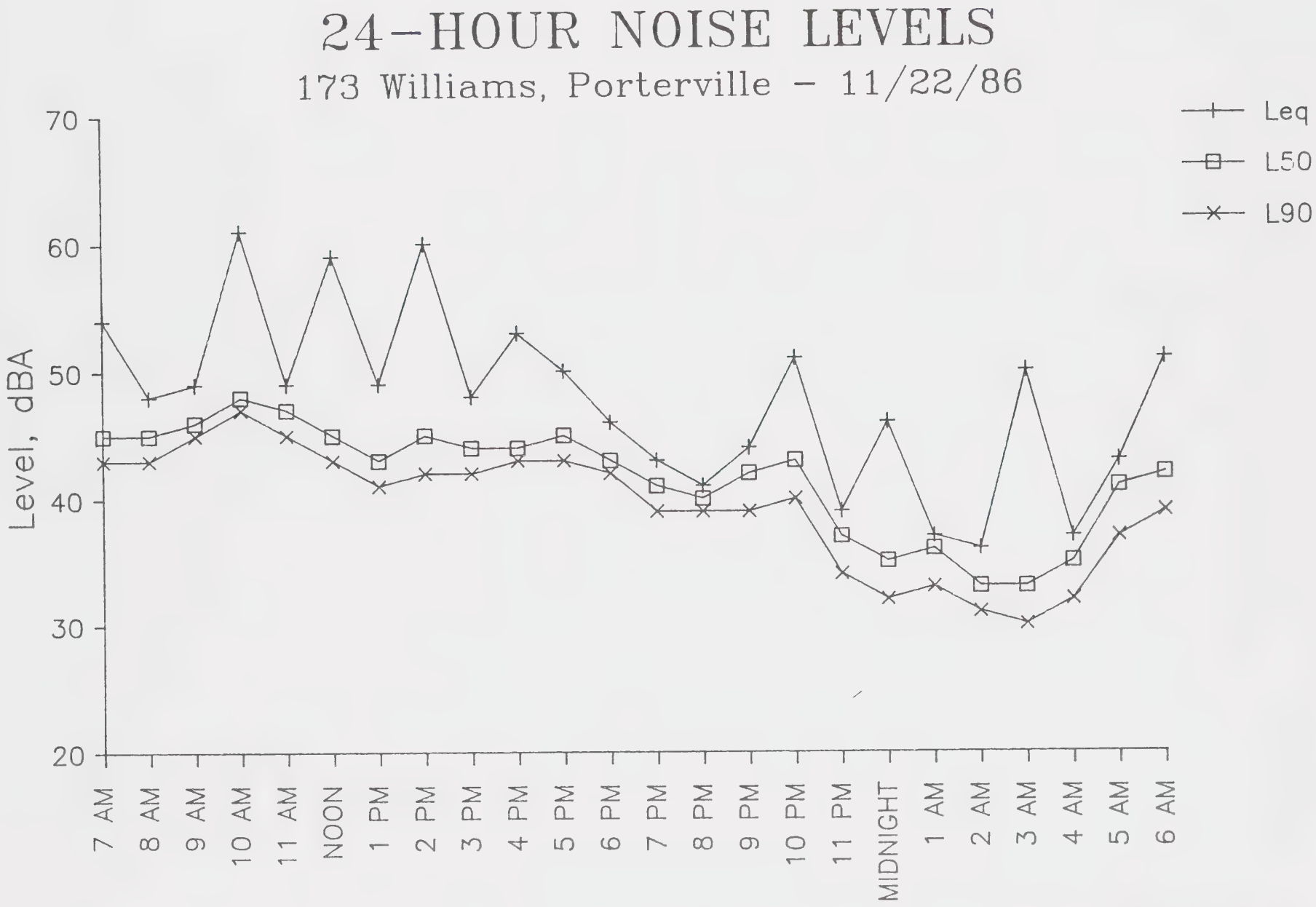


Figure 4-7

BBA



BBA

Figure 4-8

24-HOUR NOISE LEVELS

Camp Nelson

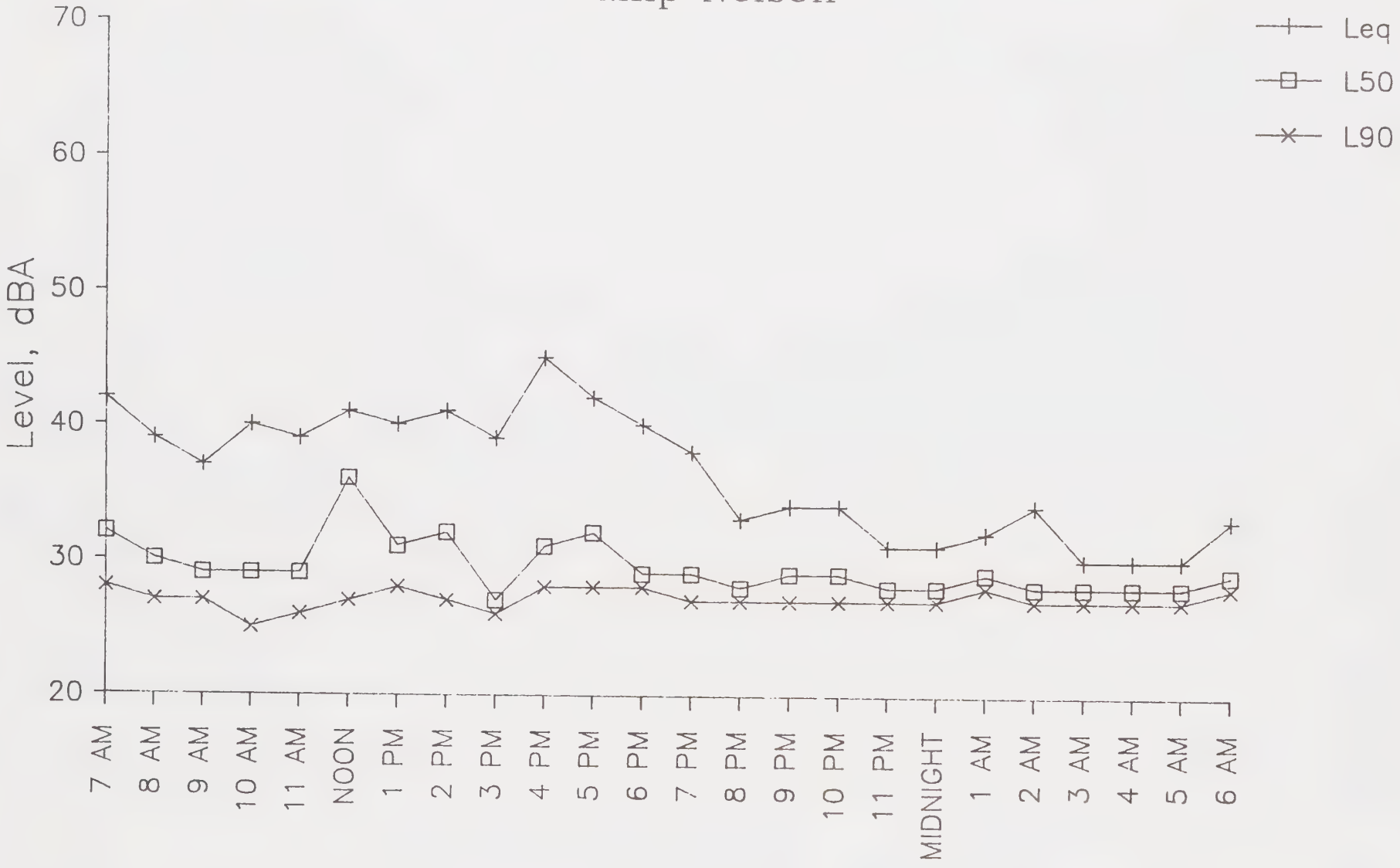
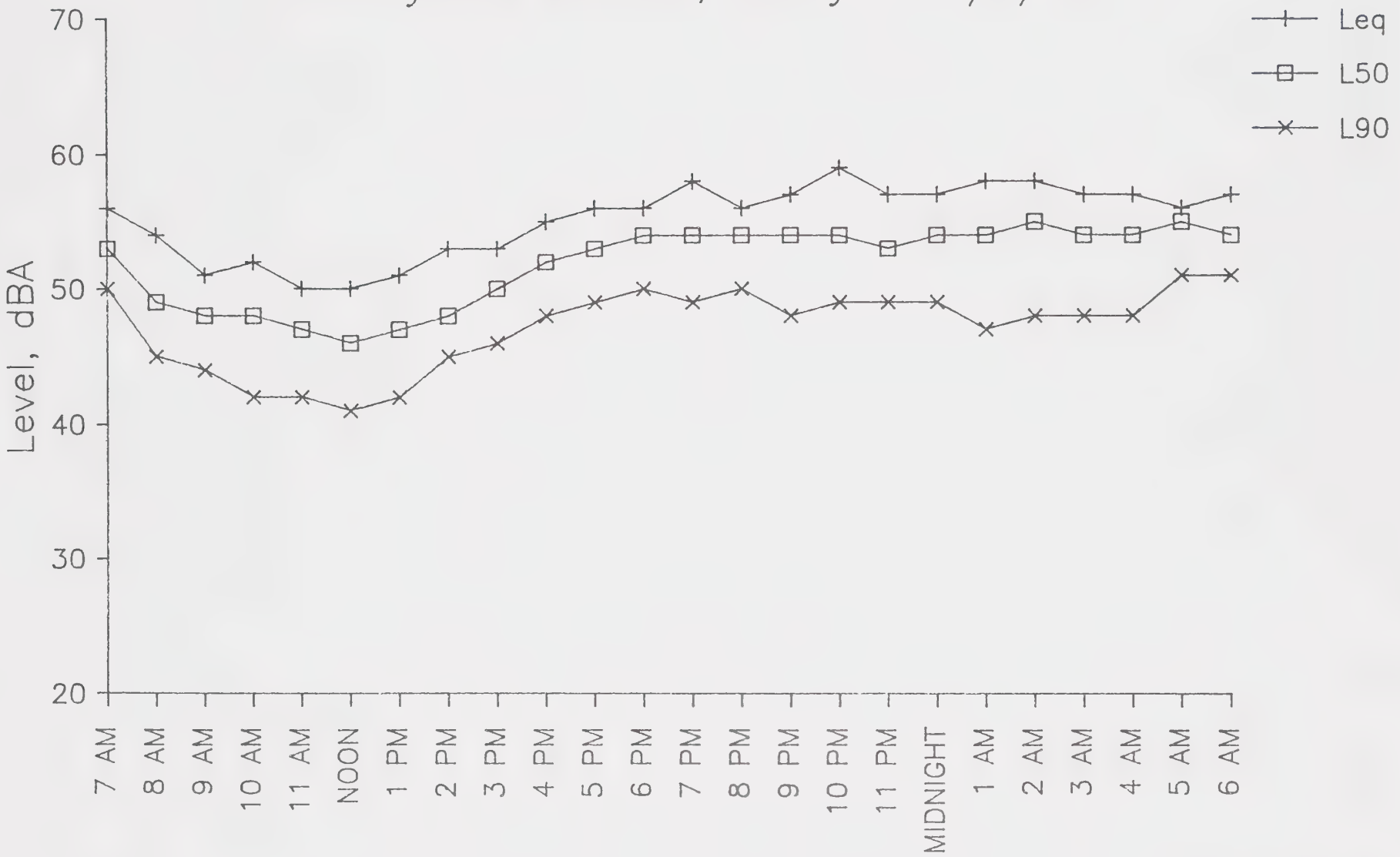


Figure 4-9

BBA

24-HOUR NOISE LEVELS

Pixley Fire Station, Pixley - 11/5/86



BBA

Figure 4-10

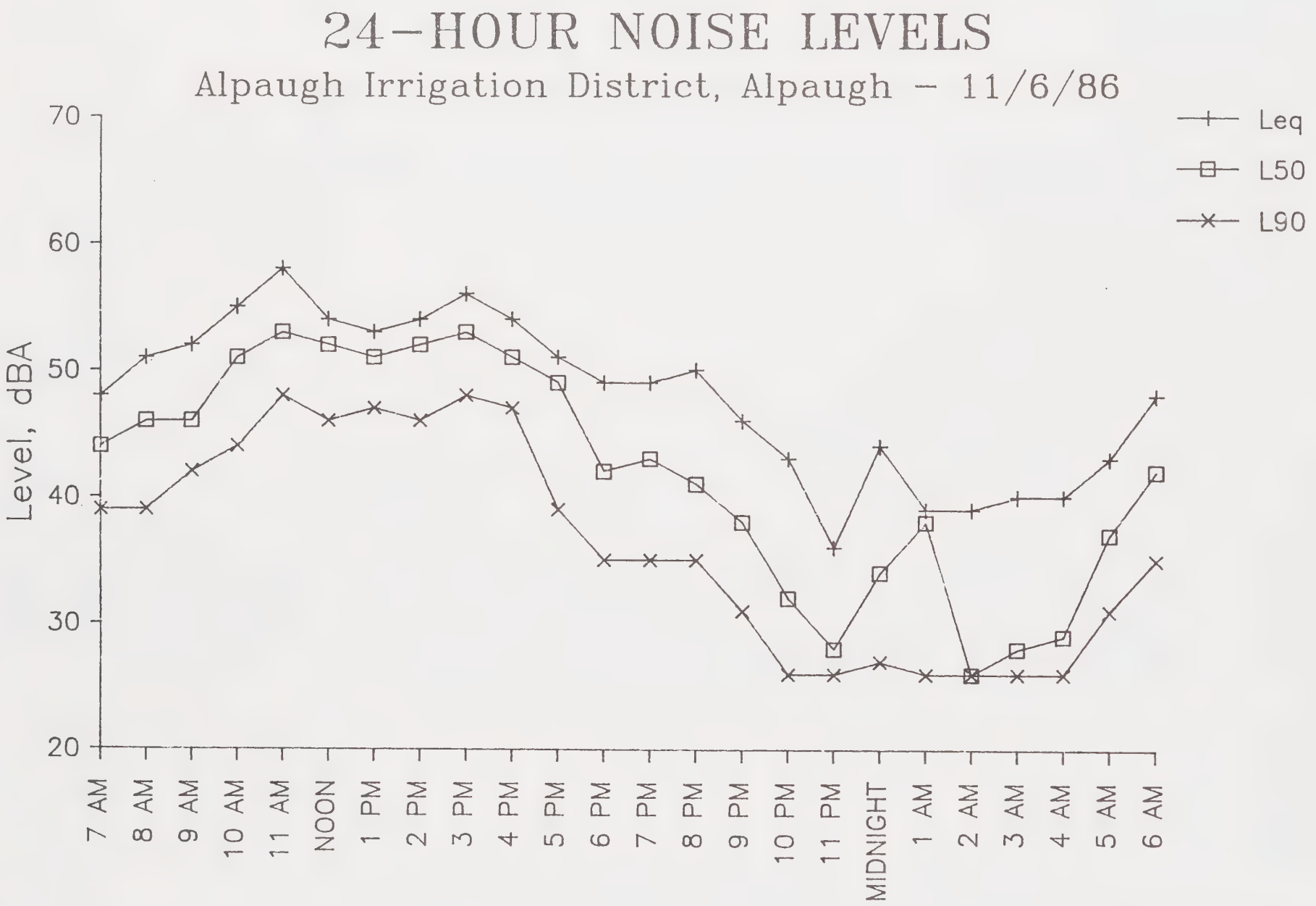


Figure 4-11

BBA

5.Ø TECHNIQUES FOR NOISE CONTROL

Any noise problem may be considered as being composed of three basic elements: the noise source, a transmission path, and a receiver. Local control of noise sources is practical only with respect to fixed sources (e.g., industrial facilities, outdoor activities, etc.), as control of vehicular sources is generally preempted by federal or state law. Control of fixed noise sources is usually best obtained by enforcement of a local noise control ordinance. The emphasis of noise control in land use planning is usually placed upon acoustical treatment of the transmission path and the receiving structures.

The appropriate acoustical treatment for a given project should consider the nature of the noise source and the sensitivity of the receiver. The problem should be defined in terms of appropriate criteria (e.g., L_{dn}, L_{eq}, L_{max}), the location of the sensitive receiver (inside or outside), and when the problem occurs (daytime or nighttime). Noise control techniques should then be selected to provide an acceptable noise environment for the receiving property while remaining consistent with local aesthetic standards and practical structural and economic limits. Basic noise control techniques include the following:

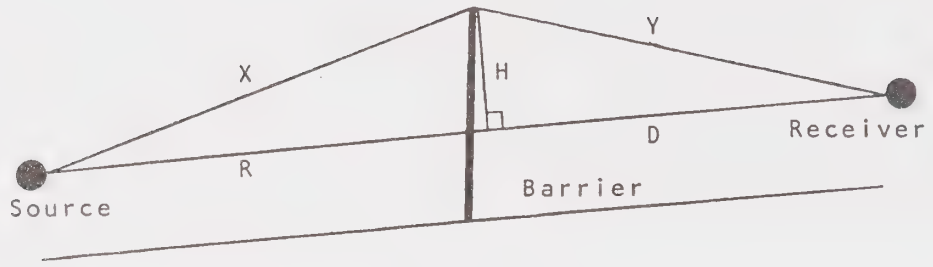
5.1 USE OF SETBACKS

Noise exposure may be reduced by increasing the distance between the noise source and receiving use. Setback areas can take the form of open space, frontage roads, recreational areas, storage yards, etc. The available noise attenuation from this technique is limited by the characteristics of the noise source, but is generally 4 to 6 dBA per doubling of distance from the source.

5.2 USE OF BARRIERS

Shielding by barriers can be obtained by placing walls, berms or other structures, such as buildings, between the noise source and the receiver. The effectiveness of a barrier depends upon blocking line-of-sight between the source and receiver, and is improved with increases in distance the sound must travel to pass over the barrier as compared to a straight line from source to receiver. The difference between the distance over a barrier and a straight line between source and receiver is called the "path length difference," and is the basis for calculating barrier effectiveness. Figure 5-1 illustrates the principles of noise control by barriers. The path length difference is the difference between (R + D) and (X + Y).

FIGURE 5-1



Barrier effectiveness depends upon the relative heights of the source, receiver and barrier. In general, barriers are most effective when placed close to either the receiver or the source. An intermediate barrier location yields a smaller path length difference for a given increase in barrier height than does a location closer to either source or receiver.

For maximum effectiveness, barriers must be continuous and relatively air-tight along their length and height. To ensure that sound transmission through the barrier is insignificant, barrier mass should be about 4 lbs./square foot, although a lesser mass may be acceptable if the barrier material provides sufficient transmission loss in the frequency range of concern. Satisfaction of the above criteria requires substantial and well-fitted barrier materials, placed to intercept line-of-sight to all significant noise sources. Earth, in the form of berms or the face of a depressed area, is also an effective barrier material.

The attenuation provided by a barrier depends upon the frequency content of the source. Generally, higher frequencies are attenuated (reduced) more readily than lower frequencies. This results because a given barrier height is relatively large compared to the shorter wavelengths of high frequency sounds, while relatively small compared to the longer wavelengths of the frequency sounds. The effective center frequency for traffic noise is usually considered to be 550 Hz. Railroad operations, aircraft and industrial noise sources emit noise with differing frequency content, so the effectiveness of a barrier will vary for each of these sources. Frequency analysis is necessary to properly calculate barrier attenuation of noise from sources other than highway traffic.

There are practical limits to the noise reduction provided by barriers. For highway traffic noise, a 5 to 10 dBA noise reduction may often be reasonably attained. A 15 dBA noise reduction is sometimes possible, but a 20 dBA noise reduction is extremely difficult to achieve. Barriers may be provided in the form of walls, berms, or berm/wall combinations. The use of an earth berm in lieu of a solid wall will provide up to 3 dBA additional attenuation over that attained by a solid wall alone, due to the absorption provided by the earth. Berm/wall combinations offer slightly better acoustical performance than solid walls, and are often preferred for aesthetic reasons.

Another form of barrier is the use of a depressed noise source location, such as depressed roadways or depressed loading areas in shopping centers. The walls of the depression serve to break line-of-sight between the source and receiver, and will provide some absorption if left in earth or vegetative cover.

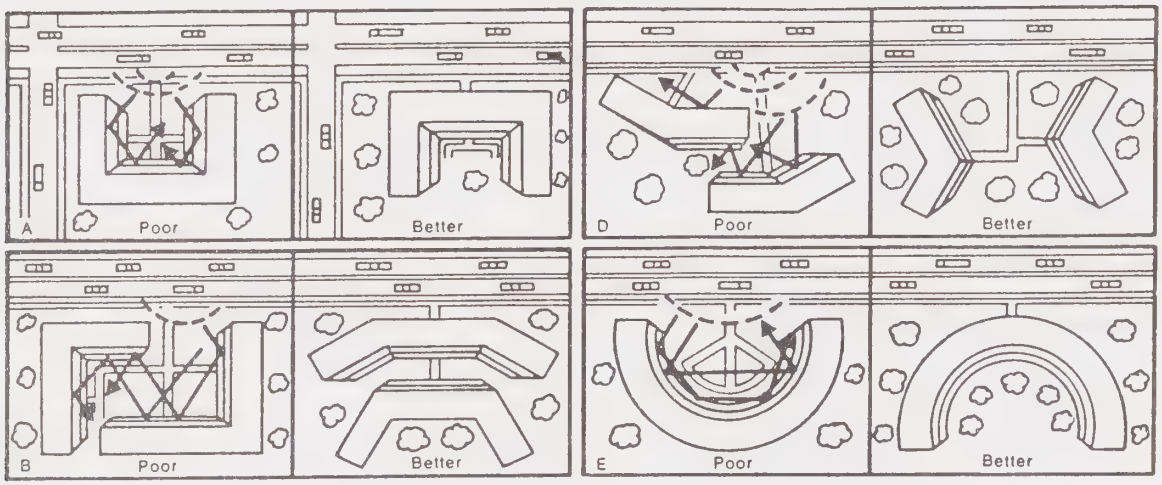
When calculating barrier effectiveness, the effective heights above the roadway for a traffic noise source should be 8 feet for heavy trucks, 2 feet for medium trucks and 0 feet for automobiles. The effective height for a diesel locomotive is approximately 10 feet above the rails. A railroad horn source is generally 5 feet above project grade, although a receiver height of 4 feet above the finished floor height may be used for small decks or patios where persons are likely to remain seated most of the time.

5.3 SITE DESIGN

Buildings can be placed on a project site to shield other structures or areas, to remove them from noise-impacted areas, and to prevent an increase in noise level caused by reflections. The use of one building to shield another can significantly reduce overall project noise control costs, particularly if the shielding structure is insensitive to noise. As an example, carports or garages can be used to form or complement a barrier shielding adjacent dwellings or an outdoor activity area. Similarly, one residential unit can be placed to shield another so that noise reduction measures are needed for only the building closest to the noise source. Placement of outdoor activity areas within the shielded portion of a building complex, such as a central courtyard, can be an effective method of providing a quiet retreat in an otherwise noisy environment. Patios or balconies should be placed on the side of a building opposite the noise source, and "wing walls" can be added to buildings or patios to help shield sensitive uses.

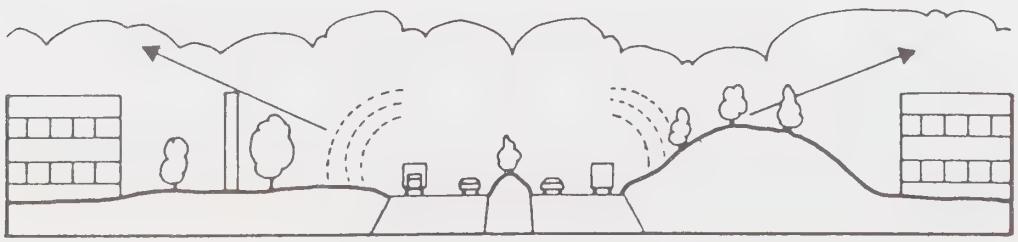
Where project design does not allow using buildings or other land uses to shield sensitive uses, noise control costs can be reduced by orienting buildings with the narrow end facing the noise source, reducing the total area of the building requiring acoustical treatment. Some examples of building orientation to reduce noise impacts are shown in Figure 5-2.

FIGURE 5-2



Another option in site design is the placement of relatively insensitive land uses, such as commercial or storage areas, between the noise source and a more sensitive portion of the project. Examples include development of a commercial strip along a busy arterial to block noise affecting a residential area, or providing recreational vehicle storage along the noise-impacted edge of a mobile home park. If existing topography or development adjacent to the project site provides some shielding, as in the case of an existing berm, knoll or building, sensitive structures or activity areas may be placed behind those features to reduce noise control costs (Figure 5-3).

FIGURE 5-3

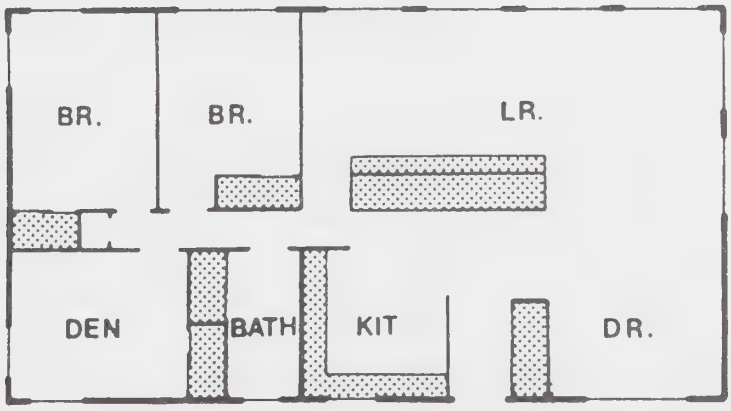


Site design should also guard against the creation of reflecting surfaces which may increase onsite noise levels. For example, two buildings placed at an angle facing a noise source may cause noise levels within that angle to increase by up to 3 dBA. The open end of a "U"-shaped building should point away from noise sources for the same reason. Landscaping walls or noise barriers located within a development may inadvertently reflect noise back to a noise-sensitive area unless carefully located. Avoidance of these problems, as well as attaining an effective, aesthetic site design requires close coordination between local agencies, the project engineer and architect, and the acoustical consultant.

5.4 UNIT DESIGN

When structures have been located to provide maximum noise reduction by barriers or site design, noise reduction measures may still be required to achieve an acceptable interior noise environment. The cost of such measures may be reduced by placement of interior dwelling unit features. For example, bedrooms, living rooms, family rooms and other noise-sensitive portions of a dwelling can be located on the side of the unit farthest from the noise source, as shown by Figure 5-4.

FIGURE 5-4



Bathrooms, closets, stairwells and food preparation areas are relatively insensitive to exterior noise sources, and can be placed on the noisy side of a unit. When such techniques are employed, noise reduction requirements for the building facade can be significantly reduced, although the architect must take care to isolate the noise impacted areas by the use of partitions or doors.

5.5 BUILDING DESIGN

In some cases, external building facades can influence reflected noise levels affecting adjacent buildings. This is primarily a problem where high-rise buildings are proposed, and the effect is most evident in urban areas, where an "urban canyon" may be created. Bell-shaped or irregular building facades, setbacks and attention to building orientation can reduce this effect.

5.6 NOISE REDUCTION BY BUILDING FACADES

When interior noise levels are of concern in a noisy environment, noise reduction may be obtained through acoustical design of building facades. Standard residential construction practices provide 12-15 dBA noise reduction for building facades with open windows, and 20-25 dBA noise reduction when windows are closed. A 20 dBA outdoor-to-indoor noise reduction can be obtained by requiring that the building design include adequate ventilation systems, allowing windows on a noise-impacted facade to remain closed under any weather condition.

Where greater noise reduction is required, acoustical treatment of the building facade is necessary. If window area is critical, use of acoustical glazing (thicker glass or increased air space between panes), fixed (non-movable) glazing and reduction of windows are effective noice control techniques. Standard energy-conservation double-pane glazing with an 1/8" or 1/4" air-space is not considered acoustical glazing, as its sound transmission loss may be less than single-pane 1/8" glazing. Noise transmitted through walls can be reduced by increasing wall mass (using stucco or brick in lieu of wood siding), isolating wall members by the use of double- or staggered- stud walls, or mounting interior walls on resilient channels.

Noise control measures for exterior doorways include reducing door area, using solid-core doors, and acoustically sealing door perimeters with suitable gaskets. Roof/ceiling treatments may include the use of plywood sheathing under roofing materials or resilient channels for ceiling panels. Vent ducts and openings for attic or subfloor ventilation may also require acoustical treatment. Tight-fitting fireplace dampers and glass doors may be needed in aircraft noise-impacted areas.

Whichever noise control techniques are employed, it is essential that attention be given to installation of weatherstripping and caulking of joints.

Acoustical design for building facades should be based upon analysis of the level and frequency content of the noise source. The transmission loss of each building component should be defined, and the composite noise reduction for the facade calculated, accounting for absorption in the receiving room. A one-third octave band analysis is a definitive method of calculating the A-weighted noise reduction of a facade. Requirements for transmission loss analyses are outlined by Section 2-3501 of the California Administrative Code, Title 24.

A common measure of transmission loss is the Sound Transmission Class (STC). STC ratings are not directly comparable to A-weighted noise reduction, and must be corrected for the spectral content of the noise source.

5.7 USE OF VEGETATION

It is often supposed that trees and other vegetation can provide significant noise attenuation. However, approximately 100 feet of dense foliage (so that as no visual path extends through the foliage) is required to achieve a 5 dBA attenuation of traffic noise. The use of vegetation as a noise barrier should not be considered a practical method of noise control unless large tracts of dense foliage are part of the existing landscape.

Vegetation can be used to acoustically "soften" intervening ground between a noise source and receiver by increasing ground absorption of sound. Vegetative barriers have been shown to reduce tire noise and other high frequency components of traffic noise. Planting of trees and shrubs is also of aesthetic and psychological value, and may reduce adverse public reaction to a noise source by removing the source from view, even though noise levels may be largely unaffected.

5.8 SOUND ABSORBING MATERIALS

Absorptive materials such as fiberglass, foam, cloth, and acoustical tiles are used to reduce reflections or reverberation in closed spaces. Their outdoor use is usually directed toward reducing reflections between parallel noise barriers or other reflective surfaces. Maintenance of absorptive materials used outdoors is difficult because most such materials are easily damaged by sunlight and moisture. Their application as an outdoor noise control tool is limited to cases where the control of reflected noise is critical.

6.Ø TECHNICAL REFERENCE DOCUMENT APPENDICES

TULARE COUNTY NOISE
ELEMENT OF THE GENERAL PLAN

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

A-WEIGHTED SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

CNEL: Community Noise Equivalent Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

EQUIVALENT ENERGY LEVEL, L_{eq}: The sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

L_{dn}: Day/Night Average Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

NOTE: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the equivalent energy noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum A-weighted noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90}, L_{50}, etc.)

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant energy levels of noise exposure. CNEL and L_{dn} are the descriptors utilized herein to describe community exposure to noise.

APPENDIX B

DRAFT COMMUNITY NOISE CONTROL ORDINANCE

Chapter 0.00

NOISE CONTROL

Sections:

0.00.010 Purpose.

The Board of Supervisors declares and finds that excessive noise levels are detrimental to the public health, welfare and safety and contrary to the public interest as follows:

A. By interfering with sleep, communication, relaxation and the full use of one's property.
B. By contributing to hearing impairment and a wide range of adverse physiological and psychological stress conditions; and
C. By adversely affecting the value of real property.

It is the intent of this chapter to protect persons from excessive levels of noise within or near a residence, school, church, hospital or public library and to warn persons of the hazards of excessive noise in places of public entertainment.

0.00.020 Definitions.

The following words, phrases and terms as used in this chapter shall have the following meanings:

A. **"Ambient noise level"** means the composite of noise from all sources excluding the alleged offensive noise. In this context it represents the normal or existing level of environmental noise at a given location for a specific time of the day or night.

B. **"A weighted sound level"** means the sound level in decibels as measured with a sound level meter using the "A" weighted network (scale) at slow meter response. The unit of measurement is referred to herein as dBA.

C. **"Construction"** means construction, erection, enlargement, alteration, conversion or movement of any building, structures or land together with any scientific surveys associated therewith.

D. **"Cumulative period"** means an additive period of time composed of individual time segments which may be continuous or interrupted.

E. **"Decibel"** means a unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals.

F. **"Emergency work"** means the use of any machinery, equipment, vehicle, manpower or other activity in a short term effort to protect, or restore safe conditions in the community, or work by private or public utilities when restoring utility service.

G. **"Fixed noise source"** means a device, machine or combination thereof which creates sounds while fixed or stationary, including but not limited to residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners and refrigeration equipment.

H. **"Hospital"** means any building or portion thereof used for the accommodation and medical care of sick, injured or infirm persons including rest homes and nursing homes.

I. **"Impulsive noise"** means a noise of short duration, usually less than one second, with an abrupt onset and rapid decay.

J. **"Intruding noise level"** means the sound level created, caused, maintained or originating from an alleged offensive source, measured in decibels, at a specified location while the alleged offensive source is in operation.

K. **"Mobile noise source"** means any source other than a fixed noise source.

L. **"Noise disturbance"** means any sound which violates the quantitative standards set forth in this chapter.

M. **"Residential property"** means a parcel of real property which is developed and used either in whole or in part for residential purposes.

N. **"School"** means public or private institutions conducting regular academic instruction at preschool, kindergarten, elementary, secondary or collegiate levels.

O. **"Pure tone noise"** means any noise which is distinctly audible as a single pitch (frequency) or set of pitches. For the purposes of this ordinance, a pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by 5 dB for center frequencies of 500 Hz and above and by 8 dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz.

P. **"Sound level meter"** means an instrument meeting American National Standard Institute (ANSI) Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

0.00.030 Noise Measurement Criteria.

Any noise measurement made pursuant to the provisions of this chapter shall be made with a sound level meter using the "A" weighted network (scale) at slow meter response. Fast meter response shall be used for impulsive type sounds. Calibration of the measurement equipment utilizing an acoustical calibrator certified by its manufacturer to be in compliance with National Bureau of Standards (NBS) reference calibration levels shall be performed immediately prior to recording noise level data.

Exterior noise levels shall be measured within fifty feet of the affected residence, school, hospital, church or public library. Where practical, the microphone shall be positioned three to five feet above the ground and away from reflective surfaces.

Interior noise levels shall be measured within the affected dwelling unit, at points at least four feet from the wall, ceiling or floor nearest the noise source, with windows in the normal seasonal configuration. Reported interior noise levels shall be determined by taking the arithmetic average of the readings taken at the various microphone locations.

Ø.ØØ.Ø4Ø Exterior Noise Standards.

A. It is unlawful for any person at any location within the incorporated or unincorporated areas of the County to create any noise, or to allow the creation of any noise, on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any affected residence, school, hospital, church or public library to exceed the noise level standards as set forth in the following table:

		Noise Level Standards, dBA	
Category	Cumulative Number of minutes in any one-hour time period	Daytime 7 a.m. to 1Ø p.m.	Nighttime 1Ø p.m. to 7 a.m.
1	3Ø	5Ø	45
2	15	55	5Ø
3	5	6Ø	55
4	1	65	6Ø
5	Ø	7Ø	65

B. In the event the measured ambient noise level without the alleged offensive source in operation exceeds an applicable noise level standard in any category above, the applicable standard or standards shall be adjusted so as to equal the ambient noise level.

C. Each of the noise level standards specified above shall be reduced by five dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level without the source can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

Ø.ØØ.ØSØ Residential Interior Noise Standards.

A. It is unlawful for any person, at any location within the incorporated or unincorporated areas of the County, to operate or cause to be operated within a dwelling unit, any source of sound or to allow the creation of any noise which causes the noise level when measured inside another dwelling unit to exceed the noise level standards as set forth in the following table:

		Noise Level Standards, dBA	
Category	Cumulative Number of minutes in any one-hour time period	Daytime 7 a.m. to 1Ø p.m.	Nighttime 1Ø p.m. to 7 a.m.
1	5	45	35
2	1	5Ø	4Ø
3	Ø	55	45

B. In the event the measured ambient noise level without the alleged offensive source in operation exceeds an applicable noise level standard in any category above, the applicable standard or standards shall be adjusted so as to equal the ambient noise level.

C. Each of the noise level standards specified above shall be reduced by five dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued to stopped for a time period whereby the ambient noise level without the source can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

Ø.ØØ.Ø6Ø Noise Source Exemptions.

The following activities shall be exempted from the provisions of this chapter.

A. Activities conducted in public parks, public playgrounds and public or private school grounds, including but not limited to school athletic and school entertainment events.

B. Any mechanical device, apparatus or equipment used, related to, or connected with emergency activities or emergency work.

C. Noise sources associated with construction, provided such activities do not take place before 6:ØØ a.m. or after 9:ØØ p.m. on any day except Saturday or Sunday, or before 7:ØØ a.m. or after 5:ØØ p.m. on Saturday or Sunday.

D. Noise sources associated with the maintenance of residential property provided such activities take place between the hours of 6:ØØ a.m. and 9:ØØ p.m. on any day except Saturday or Sunday, or between the hours of 7:ØØ a.m. and 9:ØØ p.m. on Saturday or Sunday.

E. Noise sources associated with a lawful commercial or industrial activity caused by mechanical devices or equipment, including air conditioning or refrigeration systems, installed prior to the effective date of this chapter; that this exemption shall expire 12 months after the effective date of this chapter.

F. Noise sources associated with the collection of waste or garbage from property devoted to commercial or industrial uses.

G. Noise sources associated with seasonal agricultural packing operations provided that noise levels produced by such operations do not exceed the exterior noise level standards set forth in Section Ø.ØØ.Ø4Ø when measured as provided in Section Ø.ØØ.Ø3Ø for a cummulative period of more than 9Ø days out of the year.

H. Any activity to the extent regulation thereof has been preempted by state or federal law.

Ø.ØØ.Ø7Ø Residential Air Conditioning and Refrigeration Systems.

Notwithstanding the provisions of Section Ø.ØØ.ØØ4Ø where the intruding noise source when measured as provided in Section Ø.ØØ.ØØ3Ø is an existing residential air conditioning or refrigeration system or associated equipment, the exterior noise level shall not exceed fifty-five (55) dBA. For residential air conditioning or refrigeration systems or associated equipment installed after the effective date of this chapter, the exterior noise level when measured as provided in Section Ø.ØØ.ØØ3Ø shall not exceed fifty (5Ø) dBA.

Ø.ØØ.Ø8Ø Waste and Garbage Collection Equipment.

Notwithstanding the provisions of Section Ø.ØØ.ØØ4Ø, the collection of waste or garbage from residential property by persons authorized to engage in such activity, and who are operating truck-mounted loading or compacting equipment, shall not take place before 6:ØØ a.m. or after 7:ØØ p.m. The noise level created by such activities when measured at a distance of fifty (5Ø) feet in an open area shall not exceed the following standards:

1. Eighty-five (85) dBA for equipment in use, purchased or leased prior to the effective date of this chapter;

2. Eighty (8Ø) dBA for new equipment purchased or leased after the effective date of this chapter.

Ø.ØØ.Ø9Ø Electrical Substations.

Notwithstanding the provisions of Section Ø.ØØ.ØØ4Ø, noise sources associated with the operation of electrical substations shall not exceed fifty (5Ø) dBA when measured as provided in Section Ø.ØØ.ØØ3Ø.

Ø.ØØ.1ØØ Warning signs in places or public entertainment.

It is unlawful for any person to operate or permit the operation or playing of any loudspeaker, musical instrument, motorized racing vehicle, or other source of sound for public entertainment within a building or structure wherein the

noise level exceeds ninety-five (95) dBA as determined using the slow response of a sound level meter at any point normally occupied by a customer, without a conspicuous and legible sign stating: "WARNING! SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT."

Ø.ØØ.11Ø Variances.

A. The owner or operator of a noise source for which it has been determined violates any of the provisions of this chapter may file an application for variance from strict compliance with any particular provisions of this chapter where such variance will not result in a hazardous condition or a nuisance and strict compliance would be unreasonable in view of all the circumstances. The owner or operator shall set forth all actions taken to comply with such provisions, and the reasons why immediate compliance cannot be achieved. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership or fixed sources under common ownership on a single property may be combined into one application.

B. Upon receipt of the application and within thirty (3Ø) days, the County Health Services Department shall either (1) approve such request in whole or in part, (2) deny the request, or (3) refer the request directly to the Board of Supervisors for action thereon in accordance with the provisions of this chapter. In the event the variance is approved, reasonable conditions may be imposed which may include restrictions on noise level, noise duration and operating hours, an approved method of achieving compliance and a time schedule for its implementation. The decision of the County Health Services Department is subject to appeal to the Board of Supervisors by filing a written appeal not later than fifteen (15) days following the mailing of the decision to the applicant.

C. Factors which the County Health Services Department or Board of Supervisors must consider shall include but not be limited to the following:

1. Uses of property within the area affected by the noise;
2. Factors related to initiating and completing all remedial work;
3. Age and useful life of the existing noise source;
4. The general public interest, welfare and safety.

D. The Board of Supervisors may grant variances from provisions of this chapter subject to such terms, conditions and requirements as may be deemed reasonable to achieve compliance with the provisions and intent of this chapter.

Ø.ØØ.12Ø Violation-Enforcement.

The violation of any of the provisions of this chapter shall be an infraction punishable as provided in Section _____ of this code. The provisions of this chapter may also be enforced by an injunction issued out of the Court of jurisdiction. Any violation of the provisions of this chapter shall be deemed to be a public nuisance.

The County Health Services Department shall enforce the provisions of this chapter. Right of entry for inspection shall be as provided in Section _____ of this code.